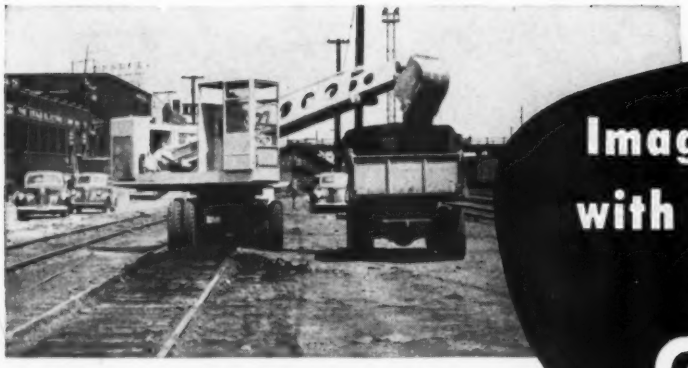
April 1953

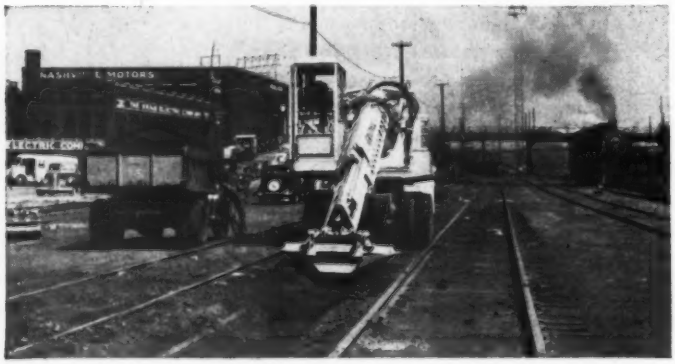
AILWAY TRACK and STRUCTURES



Gradall does a fast, neat job in cleaning up and loading cinders which constantly accumulate between and outside the rails.

Imagine doing this job with any other machine than a GRADALL

Gradall's remarkable arm-action packs plenty of power and provides, for the operator, amazing accuracy and precision that avoids any damage to rails, ties or tie plates.



A quick change of an attachment—a matter of minutes—and the Gradall is digging a neat drainage ditch between tracks.

CLEANING CINDERS from track and between ties is customarily a manual job—laborious and time taking. The multi-purpose Gradall with its unique *arm-action* and *controlled down pressure* makes it possible to do this costly job by machine—doing it cleaner and safer than with any other earth-handling machine—doing it faster and far cheaper than by hand.

Gradall's versatility, positive control, and full hydraulic action, make it an ideal machine for railroad maintenance service. It works well in close quarters—around poles, signal standards and bases—under low-hanging wires and ceilings. Interchangeable attachments for many different jobs are available in standard and special designs.

To get all the facts about the multi-purpose Gradall, see your nearest Gradall Distributor, or write The Warner & Swasey Company, Cleveland 3, Ohio.

ONE MACHINE DOES ALL THESE RAILROAD MAINTENANCE JOBS

- Sloping and Grading
- Widening Cuts and Fills
- Restoring Embankments
- Cleaning Tracks and Road Beds
- Excavating
- Trenching and Backfilling
- Ripping and Loading Old Pavement

Gradall
DIVISION OF WARNER & SWASEY Cleveland
PRECISION MACHINERY

Gradall Distributors in over 75 principal cities in the United States and Canada

YOU CAN PRODUCE IT BETTER, FASTER, FOR LESS WITH WARNER & SWASEY MACHINE TOOLS, TEXTILE MACHINERY, CONSTRUCTION MACHINERY

You use the world's best paint on jobs like this

Of the $65,000 spent to paint this great bridge, less than a third was the cost of the paint itself. That's why it is economical to use the best quality aluminum paint that adds extra years between repaintings.

So much aluminum paint is used for metal and masonry surfaces that special formulas have been developed. Paints made to these formulas last longer, protect better under heat, cold, sun, rain, smoke and fumes.

If you have plants, structures or equipment that need paint, it will pay you to find out more about the kinds of aluminum paints now available. We do not make paint. But, as the leading suppliers of aluminum pigments to paint manufacturers, we want you to get the best results from the aluminum paint you buy.

Write us about your paint problems and we'll tell you what type of aluminum paint to use. We'll also send you a copy of *Painting with Aluminum*. It is packed with facts and answers to all types of industrial painting questions. Write Paint Service Bureau, Aluminum Company of America, 1789-D Alcoa Bldg., Pittsburgh 19, Pa.

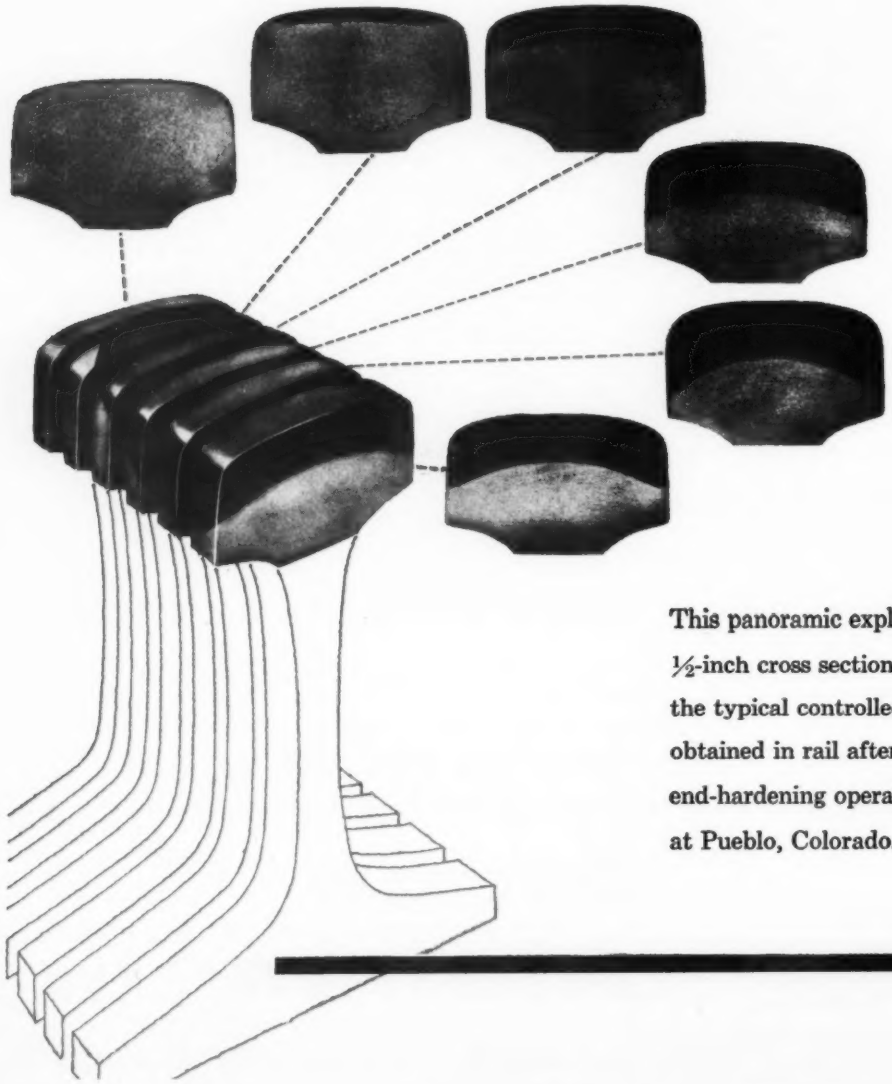
Alcoa Aluminum

ALUMINUM COMPANY OF AMERICA

CF&I RAIL-END HARDENING AT

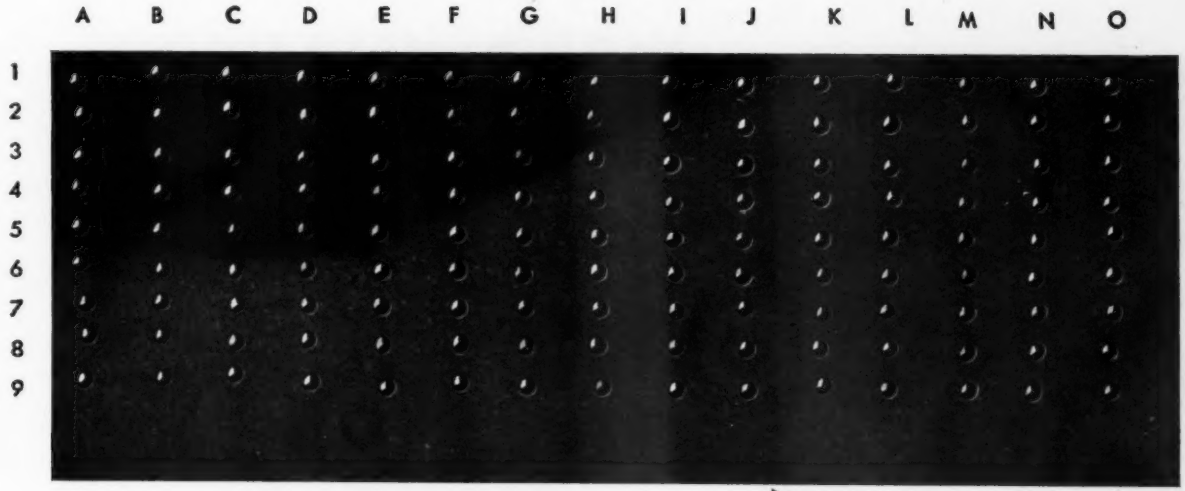
Rail-end hardening at CF&I utilizes the principle of Gradient Heating by means of gas fuels. With this type of heating, a controlled hardness pattern is imparted to the rail end being treated. Surface decarburization is very much less, due to the short time that metal is at heat and to the presence of protective atmosphere, as compared to the conventional type of heating where longer cycles are required and no protective atmosphere is present.

The heat affected zone of the hardened rail end shows that this zone on top of the rail head extends longitudinally a minimum of 1½ inches from the rail end.

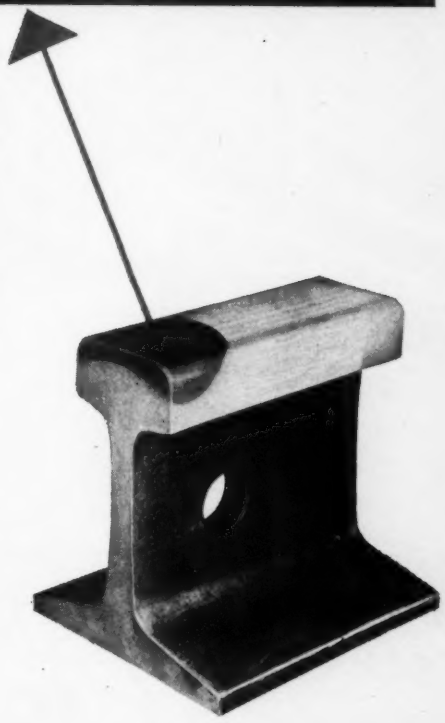


This panoramic exploded view shows etched ½-inch cross section increments which disclose the typical controlled hardness pattern obtained in rail after rail in the CF&I end-hardening operation of the rail mill at Pueblo, Colorado.

MILL GIVES LONGER LIFE



	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
1	363	363	363	363	352	341	321	293	262	255	255	248	255	262	262
2	341	341	341	331	311	293	277	262	255	255	248	255	255	262	262
3	293	311	311	302	285	277	265	255	248	248	255	255	255	262	262
4	269	277	269	265	262	248	248	255	255	255	262	262	262	262	262
5	262	262	255	248	248	248	255	255	255	255	262	262	262	255	262
6	255	262	262	255	255	255	255	255	255	255	262	255	262	262	262
7	255	265	265	262	262	262	262	262	262	255	262	262	262	262	262
8	262	265	265	262	262	265	262	262	262	262	262	262	255	262	262
9	269	269	269	265	265	262	265	265	262	262	262	262	262	262	262

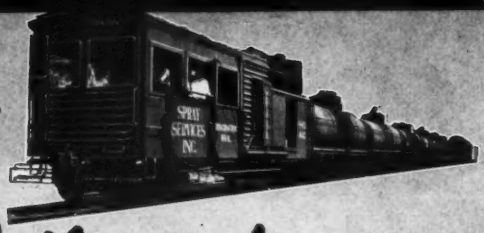


This enlarged view shows the etched pattern with the addition of the Brinell Hardness reading distribution converted from Rockwell "C" impressions.

Readings were made at ¼-inch intervals horizontally, except A, which is ⅛-inch from the rail end. Vertical readings were taken at ⅛-inch intervals below the top surface of the rail head. This discloses the gradual transition zones from hardened to normal rail hardness.

Metallurgical Reports available on request.

Complete Contract* Service for Your Railroad



WEED KILLERS

Materials combined to insure maximum control of vegetation conditions pertaining to your railroad.

PROTECTIVE RAIL SPRAYING

Providing equipment designed to spray protective coatings to rails and rail fastenings in **one** operation — capable of spraying through road crossings and special work as well as open track at a rate of 100 miles per day.

BRUSH KILLERS

Economically applied by specifically designed equipment for maximum coverage up to 100 feet each side of track resulting in positive brush control.

* ***Furnishing Equipment, Material and Trained Personnel***

CA • OILS • 2, 4-D

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BRUSH KILLERS

•

PROTECTIVE RAIL COATINGS

Spray Services *Incorporated*

Pioneers in Right-of-Way Spraying

P. O. BOX 5444 HUNTINGTON, W. VA.

No More *Trenching!*
No More *Jacking up Track!*

This WOOLERY
Tie-removing Team Now Eliminates This Slow, Costly Method!

Manufacturers of Tie Cutters, Tie End Removers, Tie End Trimmers, Power Bolt Tighteners, Spike Drivers, Motor Cars, Push Cars, Tool Transporters, Weed Burners, Extinguisher Cars, Chemical Sprayers, Tie Plate Spacers, Creosote Tie Sprayers, Rail Nippers, Flangeway Cleaners, Rail Joint Oilers, Power Joint Lubricators.

Use the WOOLERY TIE-END REMOVER in conjunction with the improved model NU WOOLERY TIE CUTTER! It's the *perfect team* for greater savings on tie renewals—and gives *smoother, safer track, too!*

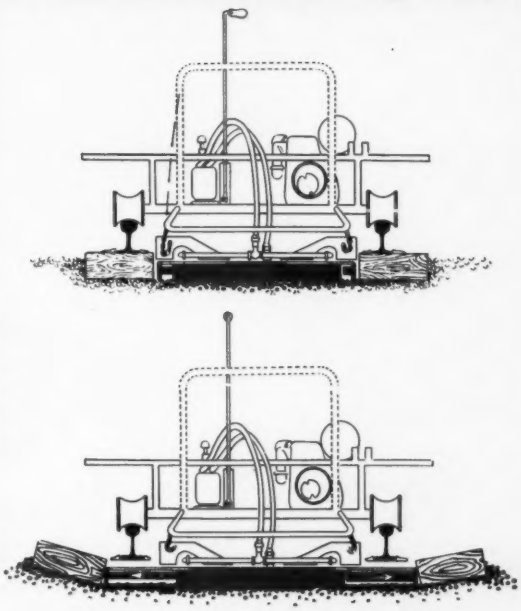
The trend toward heavier rail and double shoulder tie plates has made removing tie-ends increasingly difficult. With the WOOLERY Tie-end Remover, this task can now be done *in less than a minute by one man with no more effort than that required to turn a valve!* See how simply and efficiently this WOOLERY team works—follow the "1-2-3-" steps of tie-removal.

1. After the tie has been cut on both sides by the WOOLERY Tie Cutter, the operator of the Tie-end Remover—(who follows closely behind so that operators can assist each other in removing machines from track)—lifts the center section out with tie tongs.

2. A double-ended hydraulic cylinder is then lowered into the tie bed.

3. A simple turn of the valve moves these two pistons outward, *pushing the tie-ends completely clear of the rail—whether working with single or double shoulder tie plates!* The crib is now open—and only the necessary amount of ballast is removed to admit the new tie.

There has been no trenching or jacking up of track—thus line and surface of track are maintained, soft spots and humpy track are eliminated—the new tie rests on a firm bed and little or no tamping is necessary!



SINCE 1917 RAILWAY MAINTENANCE EQUIPMENT

Woolery MACHINE COMPANY

2919 COMO AVE. S. E. MINNEAPOLIS 14, MINN.

Exclusive Export Representatives

PRESSED STEEL CAR CO., NEW YORK, N. Y.

SPECIFICATIONS

- ENGINE Wisconsin air-cooled 4-6 H.P.
- PUMP 1,500 P.S.I. built-in relief valve, 1 gal. reservoir.
- DRIVE Double V-belt.
- CYLINDER 3" bore, honed finish, double-ended, double-acting. Hardened, ground and chrome plated rams equipped with rod wipers.
- TRACK ROLLERS 6" self-centering, insulated.
- NET WEIGHT 360 pounds.
- CRATED WEIGHT 490 pounds.

SEND FOR YOUR COPY

...of this brand new data-packed catalog

No effort has been spared in making this new Monotube Pile Catalog the most comprehensive one ever produced. You'll find its engineering and test data, descriptive material, numerous application photos, etc., to be interesting, helpful and valuable as a reference source. For your copy, use the handy coupon or write to The Union Metal Manufacturing Co., Canton 5, Ohio.

UNION METAL
Monotube Foundation Piles

FOR YOUR CONVENIENCE

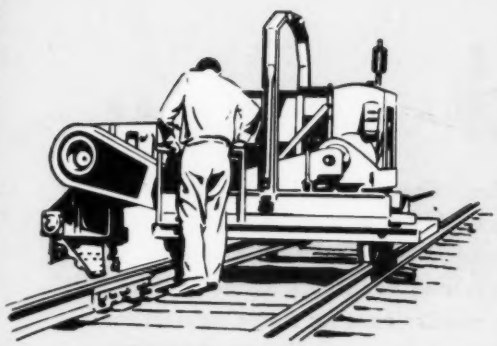
NAME_____

TITLE_____

AFFILIATED WITH_____

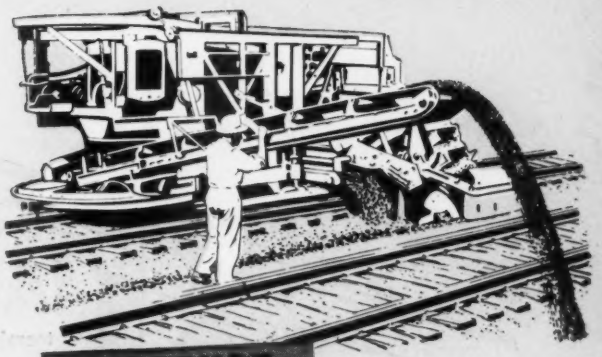
ADDRESS_____

CITY_____ STATE_____



CRIBEX

Removes material contained in the cribs and deposits it beyond the ends of the ties. Leaves a smooth, uniformly-graded tie floor, completely emptying the crib without damage to ties or rail. *Proved in use in excavating over 3,500,000 cribs.*



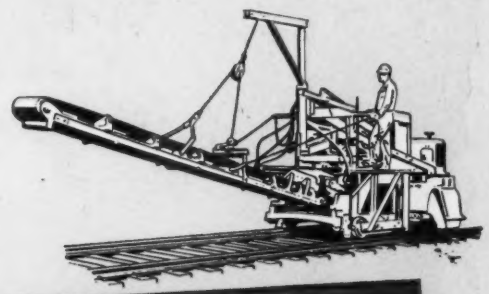
SCREENEX

Takes fouled, excavated ballast from BALLASTEX, passes this material over a vibrating "*SYMONS*" Rod Deck Screen and returns cleaned ballast to the track, intertrack, or shoulder in any desired proportions—wasting the screenings to the side beyond the shoulder.

THESE *HUSKY*
NORDBERG MACHINES
HAVE PROVED THEMSELVES ON THE *TOUGHEST* MAINTENANCE JOBS

BALLASTEX

Excavates ballast in the area between the tracks or in the shoulder and disposes it by either wasting to the side or feeding it to the SCREENEX for cleaning. Digs a uniform trench 42-inches wide, or any desired depth to a maximum of 30-inches below top of rail.



DSL YARD CLEANER

Cleans track faster, better, at lower cost—right down to the ties—without damaging them. Moves on the rails with plows grading the intertrack and feeding material into an impeller, which deposits material on conveyors for disposal into cars on an adjacent track, into dump body push trucks or over the bank—as desired.

The speed, economy and versatility of the CRIBEX . . . BALLASTEX . . . SCREENEX and YARD CLEANER has been amply proved in service. Let us show you how these modern maintenance machines can save time and money for you.

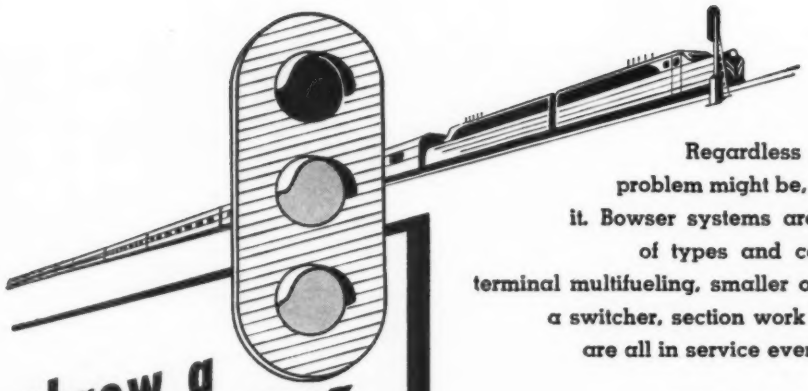
For full details, send for BULLETINS.

R952

ADZING MACHINE • CRIBEX® • BALLASTEX® • SCREENEX® • GANDY • POWER JACK • POWER WRENCH • RAIL DRILL • RAIL GRINDERS • SPIKE PULLER • TRAKGAGER • TRACK SHIFTER • DSL YARD CLEANER

NORDBERG MACHINERY

NORDBERG MFG. CO., *Milwaukee, Wis.*



throw a BLOCK ON EXCESSIVE FUEL HANDLING COSTS . . .

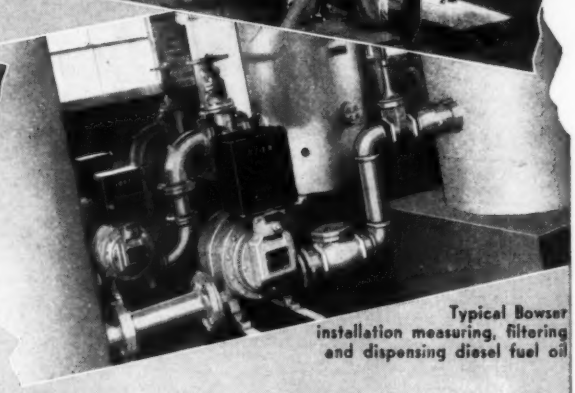
Regardless of what your fueling problem might be, Bowser can help you solve it. Bowser systems are available in a variety of types and capacities. Large systems for terminal multifueling, smaller ones for single locomotives, a switcher, section work cars or scooters . . . are all in service every day on most railroads.

As the pioneer and foremost builder of railroad liquids handling equipment, Bowser can furnish complete engineering service and can supply all the necessary equipment for proper installations of complete systems. Bowser will also accept full responsibility in assuring you of complete satisfaction. This combination is Bowser's "block" against excessive fueling costs. You can't beat it!

One-package SERV-A-TRAIN diesel or lube oil unit

High-speed fueling . . . up to 350 g.p.m. from each hose

Bowser meter checking lube oil receipts



Typical Bowser installation measuring, filtering and dispensing diesel fuel oil

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Now!

GENERAL CHEMICAL'S

Rite-o-way* BRAND

TCA-CHLORATE

★ Outstanding for Control of Perennial Weeds and Grasses!

★ Especially Effective for Early Spring and Late Fall Applications!

GENERAL CHEMICAL WEED CONTROL

Recent AREA† tests have shown a formulation of Sodium Trichloroacetate and Sodium Chlorate to be an outstanding multi-purpose weed killer, particularly where perennial grasses are a problem. Most effective results were obtained when used for early spring and late fall applications.

General Chemical, long a leader in railroad weed control, is now producing "Rite-o-way" Brand TCA-CHLORATE especially for railroad use. It contains a *special, high-strength* formulation of Sodium Trichloroacetate and Sodium Chlorate. When applied in pre-frost and post-frost months, it provides maximum root control for perennial weeds and grasses.

Let us tell you more about General's "Rite-o-way" Brand TCA-CHLORATE formulation . . . and about the results that General Chemical's proven weed control program has achieved for leading roads. A confidential conference with a General Chemical weed control specialist will show you how to take full advantage of General's "customized" weed control program for 1953. For further information, write to the address below.

†See AREA Bulletin Vol. 54, No. 507-Feb., 1953

*General Chemical Trade-Mark

Weed Killer Department

GENERAL CHEMICAL DIVISION

ALLIED CHEMICAL & DYE CORPORATION

40 Rector Street, New York 6, N. Y.

Following are General Chemical's Rite-o-way Brand Weed Killers. One or more of these can provide the right combination to give outstanding weed control results for your road. Investigate today!

TCA-CHLORATE
Special High Strength Formulation

Contains a special high-strength formulation of sodium trichloroacetate and sodium chlorate, now widely recognized as the outstanding all-purpose weed control material. Provides maximum root control for perennial weeds and grasses. Most effective when applied in post-frost and pre-frost months (early spring and late fall). Mid-summer treatments may be used for control of annual growth and perennial seedlings.

FORMULA 7
(TCA, Acid in an Oil Base)

For general purpose grass control. Used with diluting oil and one of the additives listed for over-all control of weeds.

FORMULA 7
(with 2,4-D)

Combines maximum contact "knock-down" of heavy foliage and residual control of root crowns, providing long-lasting suppression of regrowth. Used with diluting oil where grasses predominate, but includes sufficient 2,4-D to control moderate infestations of broad-leafed weeds.

FORMULA 7 B-D

Used with diluting oil for control of very resistant weeds and grasses. The amount of 2,4-D has been increased and fortified by pentachlorophenol.

SODIUM TCA
(Liquid Concentrate)

For control of noxious grasses. For all-purpose weed control when used with sodium chlorate or one of the 2,4-D additives listed.

EMULSIBLE AROMATIC OIL

Low cost contact weed control for temporary clearance of seedling growth and as interim treatment between seasonal applications for perennial root control.

2,4-D AMINE ADDITIVE

Used simultaneously with Formula 7 or mixed with Sodium TCA for all-purpose weed and grass control.

2,4-D ESTER ADDITIVE

For use with Formula 7 where cotton or other plants susceptible to 2,4-D are not adjacent to treated area.

2,4-D—2,4,5-T ESTER
Brush Killer (Water Soluble)

utting berm ditch along main- e right-of-way near Chillicothe, Illinois, Tournapull self-loads root-laced clay . . . aps up to 5 cu. yds. in less than a inute. With speeds to 28 m.p.h., the one)" and its one operator completed this tching job fast, and at a much lower ist than with former methods. "D" elimi- ated need for a work train and crew.

approach of traffic "D" es up on bank. As soon as the line is ir, rig will go back to work. No time ist deadheading work trains to nearest ng . . . through-traffic is not delayed. ti-disc 4-wheel air brakes hold rig ly on steep side slope.

Self-powered moves at speeds to 28 m.p.h. save delays, get more work done. With big low-pressure rubber tires, Tournapull drives along right-of-way without damage to ties or tracks. Simplifies dispatching . . . saves time of loading and unloading . . . goes right to work.

At stockpile, "D" uses its bulldozer blade to side-cast screened rock to level a loading course. Electric-control blade gives fast, smooth dozing action. Rig has plenty of power (122 h.p.) and maneuverability (90° turns in 12′ 9″ radius) to speed dozing.

HOW

Your railroad can cut costs with TOURNAPULLS

Sloping 4-to-1 bank, "D" do
topsoil from hillside cut. Other jobs .
repairing washouts . . . stockpiling c
. . . clearing slides . . . plowing snow .
clearing right-of-way. Write for job-prov
data on your type of work . . . or,
your LeTourneau Distributor.

Spreading ballast, "D" d
tributes even layers from 1" to 10" d
. . . can also pile entire load in one sp
Here, operator will later level ballast
lowering bulldozer blade to "float" on
rails and act as depth shoe. 8' 1" bl
easily covers gauge of tracks.

Self-loading ballast, Tourna-pull gets about 4½ cu. yds. of 1½" rock per load. Power-proportioning differential, which applies 4 times the power to wheel on firmest footing, keeps "D" pulling through loose, soft, or slippery material . . . reduces downtime for weather.

Turning 90° in radius of 12' 9", "D" moves into position for spreading. Rig crosses tracks without blocking . . . does no damage to rails, switches, etc. Big 18.00 x 25 tires deflect load evenly over obstructions . . . do not chamfer ties, trip or damage block signals.

Loading from hopper, T
napull's square top opening speeds h
dling. Wash water drains freely f
bottom of scraper . . . eliminates hau
unnecessary weight. Rig also can
loaded by shovel or dragline . . . spe
both long and short haul operati

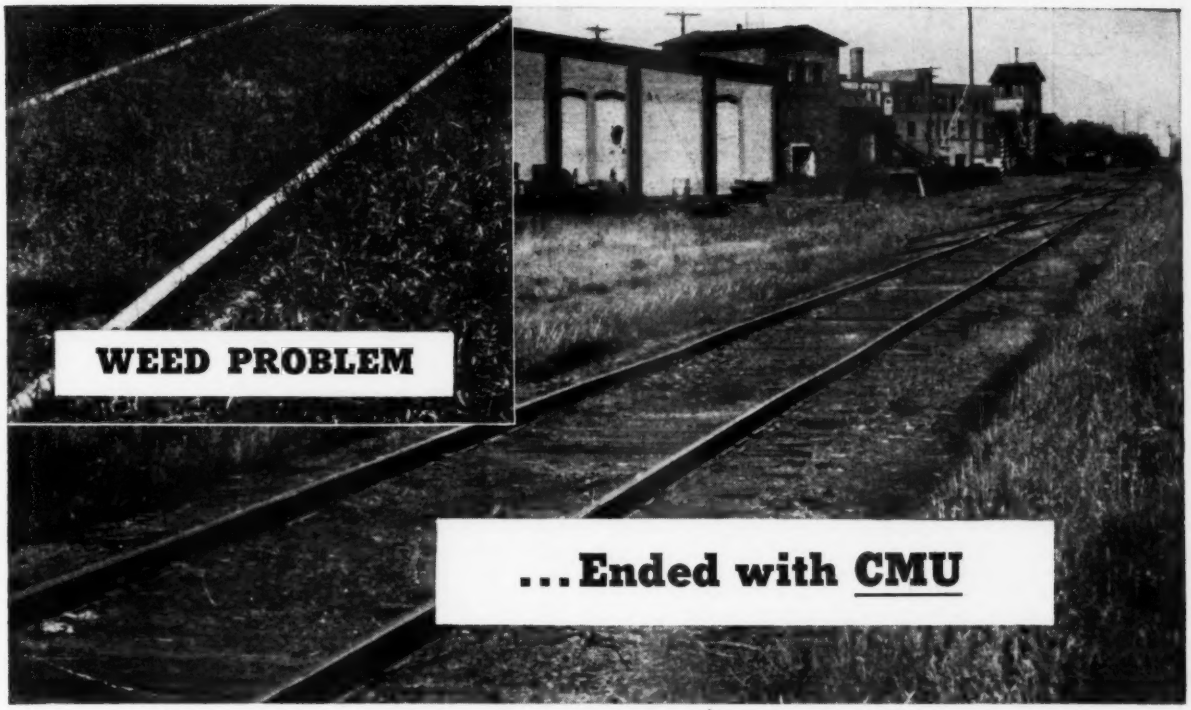
Tournapull, Tournadozer—Trademark Reg. U. S. Pat. Off. DP-1

Send now to: **R. G. LeTOURNEAU, INC., *Peoria, Illinois***

Name_____ Title_____

Company_____

☐ Please tell us more about 9-ton, 122 h
D Tournapull. ☐ Also send data on
m.p.h., 186 h.p. rubber-tired Tournado

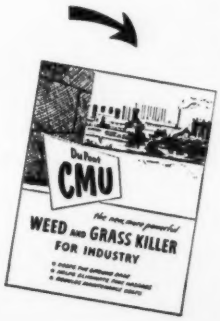


Powerful Du Pont CMU kills weeds and grass and prevents regrowth

Save labor and simplify the job of keeping weeds down . . . with Du Pont CMU. As little as 1 to 1½ pounds per 1000 square feet . . . 40 or 60 pounds per acre . . . can get rid of weeds and grass for an entire growing season or longer. It gives you new long-lasting efficiency in cutting down fire and maintenance problems caused by unwanted vegetation. Use Du Pont CMU around sidings, track, switches, culverts, bridges, fences and railyards.

- Kills most kinds of weeds and grass and prevents regrowth. It works through the roots . . . just spray it on the ground.
- Eliminates fire hazards caused by unwanted vegetation.
- Saves work. One spray with CMU takes the place of repeated hand cutting, mowing, or other less effective means.
- Cuts maintenance. Prevents weeds from fouling up machinery and causing it to rust, keeps the way clear for outdoor work of any kind. Destroys cover for rodents and other vermin.
- Non-flammable, non-volatile, non-corrosive. Comes as a wettable powder to mix with water.

TO GET THIS BOOKLET SHOWING RESULTS WITH CMU, *fill in coupon at right.*



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REG. U. S. PAT. OFF.
BETTER THINGS FOR BETTER LIVING
...THROUGH CHEMISTRY

E. I. du Pont de Nemours & Co. (Inc.) B-4
Grasselli Chemicals Department
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NEWS NOTES...

APRIL 1953

...a resumé of current events throughout the railroad world

Railroad non-operating employees will receive wage increases of 4 cents per hour as the result of a decision by Paul N. Guthrie, referee in the so-called "improvement factor," wage case. Mr. Guthrie was appointed to handle the case by former President Truman, but both parties (the railroads and the unions) agreed to accept his decision as binding regardless of whether it was made before or after Mr. Truman went out of office.

•

Union-shop agreements now cover 80 per cent of those railroad non-operating employees who are represented by the so-called "non-op" unions. The National Mediation Board has been advised by George E. Leighty of the Order of Railroad Telegraphers, who heads the non-op negotiating committee, that he expects the movement to be completed in the "near future."

•

Class I railroads, in January 1953, had an estimated net income, after interest and rentals, of $58 million, according to the Bureau of Railway Economics of the Association of American Railroads. In the same month last year, net income was $42 million. Net railway operating income in the first month of this year was an estimated $80,074,947, compared with $66,178,797 in January 1952.

•

J. Edgar Hoover, director of the Federal Bureau of Investigation, has appealed to citizens to assist railroad men and law enforcement officers in preventing children from tampering with railroad property. Investigations of recent attempts, or suspected attempts, to wreck trains have revealed that juveniles were responsible for the majority of the incidents.

•

William M. Jeffers, formerly president of the Union Pacific, died on March 6 at Pasadena, Calif., after an illness of several months. He had recently resigned as a director of the UP after 62 years of service with that road. Aside from his railroad service, Mr. Jeffers was widely known for his record as national rubber director in Washington during World War II.

•

Motor-truck taxes levied by the state of Illinois and the city of Chicago have been upheld by the United States Supreme Court. The state tax is a levy based on the gross weight of trucks using Illinois highways, and the Chicago tax is a per-truck levy graduated according to size of trucks.

•

The Central of Georgia has joined the Federation for Railway Progress, thus becoming the first Class I railroad, other than those in which the Alleghany Corporation has an interest, to become a member of this group. The C. of G. will continue as a member of the Association of American Railroads.

•

Electric wheel checkers, located in the Potomac yard of the Richmond, Fredericksburg & Potomac, have produced the first known instances of electrical detection of broken flanges on wheels of moving cars.

A new suburban passenger terminal for Chicago—to be situated on the north bank of the Chicago river—is the subject of a recent study submitted to the Chicago & North Western by a Chicago civic group. Describing the development as "difficult but not impossible," J. E. Goodwin, C&NW operating vice-president, has indicated that the proposal would be examined from both operating and financial standpoints. The area in question now has no railroad commuter terminal.

•

Use of metal, rather than wood, for slatting on livestock cars is being tested by the Union Pacific on 25 cars recently placed in service. The steel slatting is covered with an insulated material which prevents adhesion of animal flesh to the metal in cold weather.

•

A new passenger station, to be directly served by a 10,000-car parking lot, is contemplated by the New York, New Haven & Hartford to be located near Canton, Mass., approximately 15 miles south of Boston. The road also plans, this year, to remove overhead catenary structures and substitute diesel for electric power, between South Norwalk, Conn., and Danbury —a distance of 24 miles.

•

A new 5,620-car capacity, gravity operated, receiving, classification and forwarding yard will be built by the Southern Pacific on the site of its present Englewood yard at Houston, Tex. Estimated to cost $7 million dollars, the new yard will cover 300 acres and have a maximum width of 76 tracks. Construction of the yard facilities will begin as soon as engineering and other plans are completed.

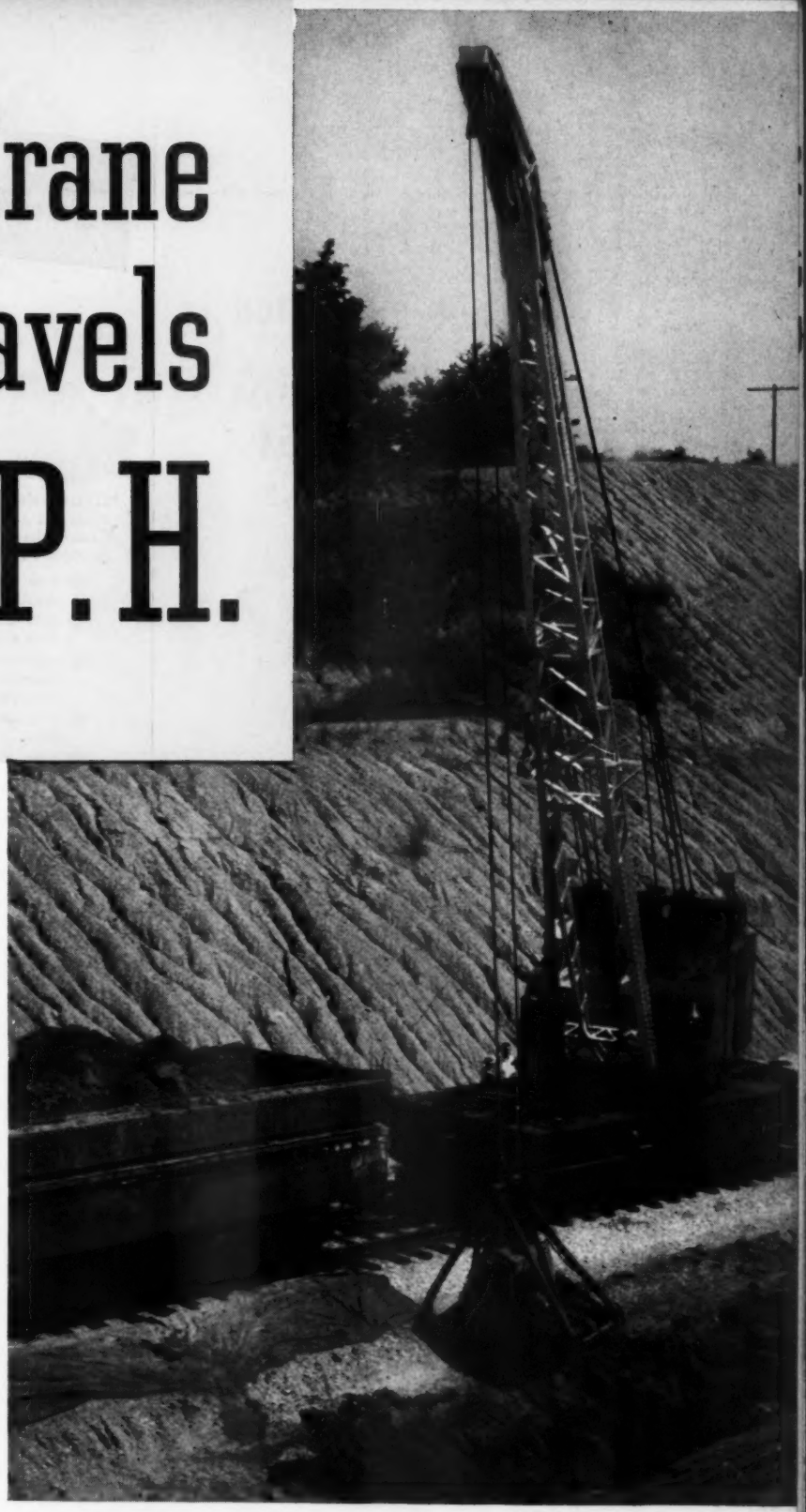
•

Development of a coal-burning gas turbine has reached the stage of intensive work on commercial application in locomotives, according to a joint announcement by Roy B. White, president, Baltimore & Ohio, and chairman of the Locomotive Development Committee of Bituminous Coal Research, Inc., and Perry T. Egbert, president of the American Locomotive Company.

•

ALSO WORTH NOTING—A new mechanical research building is being erected by the Central Research Laboratory of the Association of American Railroads at Technology Center, Chicago. . . Railways in Canada have been awarded a general freight rate increase of 7 per cent by the Canadian Board of Transport Commissioners. The boost is expected to yield the roads an estimated $38,500,000 a year in additional freight revenues . . . Secretary of Commerce Sinclair Weeks has announced that he would be receptive to offers to purchase the facilities of the government-owned Inland Waterways Corporation which operates the federal barge line on the Mississippi and Warrior rivers. "This is an instance in which government should get out of business with resultant savings to the taxpayers," said Mr. Weeks . . . Scheduled air cargo flights, three times weekly, between Montreal, Toronto and Vancouver via The Pas, Man., and Edmonton, have reportedly been proposed by Canadian Pacific Air Lines. It is planned to use special 30,000-lb. capacity cargo planes on the run.

New Crane travels 20 M.P.H.



REPAIR and maintenance operations on the Toledo, Peoria and Western Railroad are being speeded up by the addition of a new 50-ton locomotive crane. Manufactured by Industrial Brownhoist, it is powered by two Caterpillar D337 Engines, each delivering 219 HP at 1800 r.p.m., and direct-connected to DC generators.

With traction motors driving both front and rear trucks, the crane can travel at 20 m.p.h. running free, or 4 m.p.h. with a 24,000-pound tractive load. Except when moving at high speed, only one engine-generator unit is used. Mechanical energy for handling the 55-foot boom and 1½-yard bucket is taken from an extension of the generator shaft.

If higher speeds are desired, the second engine is switched in and each generator feeds one of the two traction motors. This gives the crane maximum speed and full utilization of the power available.

J. J. Dailey, Superintendent of Motive Power for the T.P.&W., expects the new crane to reduce materially the lost time involved in moving the work train to a siding while scheduled trains pass on the single-track main line.

More and more railroads are specifying Caterpillar power in locomotives, cranes, shovels, air compressors and other equipment. Leading manufacturers use Cat Engines as standard power in the machines they build. And the same dependable units are available as replacement engines.

CATERPILLAR, PEORIA, ILLINOIS

CATERPILLAR

REG. U. S. PAT. OFF.

Railroad Diesels

One Standard of Quality

DEMOUNTABLE STEEL WHEELS FOR EVERY TRACK CAR

Every Fairbanks-Morse demountable steel wheel conforms to one standard of quality — the highest!

Every step from sheet steel purchase to finished wheel is under Fairbanks-Morse control and inspection. Every wheel is cold-formed in our own plant, on our own presses using our own modern dies . . . machined and finished to a design of simplicity and strength.

This control of quality is your assurance that F-M wheels are the sturdiest track car wheels on the rails today!

When you need replacement wheels in 20", 16" or 14" sizes, standardize on quality . . . standardize on Fairbanks-Morse steel wheels for longer life. Fairbanks, Morse & Co., Chicago 5, Ill.

Conform strictly to A.R.E.A. standards

FAIRBANKS-MORSE

a name worth remembering when you want the best

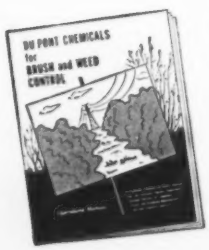
RAIL CARS AND RAILROAD EQUIPMENT • DIESEL LOCOMOTIVES AND ENGINES • ELECTRICAL MACHINERY • PUMPS • SCALES • WATER SERVICE EQUIPMENT • HAMMER MILLS • MAGNETOS

For faster, safer clearance that lasts for years

Kill Brush with Du Pont Ammate®

Many users report one spray with Du Pont "Ammate" kills brush so thoroughly that repeat sprays are not needed for years.

In most cases, when the original spray job is done well, brush is kept under control with nothing more than occasional spot sprays starting five or more years later. This assures lower cost brush control with less work for your maintenance crews or custom sprayers.



Free illustrated booklet describes how to control brush in rights of way with Du Pont "Ammate." For your copy, write Du Pont, Grasselli Chemicals Dept., Wilmington, Del.

On all chemicals always follow directions for application. Where warning or caution statements on use of the product are given, read them carefully.

Here's why "Ammate" works so well.

- **Kills roots of brush as well as tops, yet allows low-growing natural cover to come back.**
- **Control lasts for years, saves labor of hand cutting or annual spraying.**
- **Reducing to a minimum the hazard of damage by spray drift.**
- **Not hazardous to operators, livestock or wildlife. Nonflammable.**
- **Available as concentrated solution in tank cars for railroad use.**

DU PONT

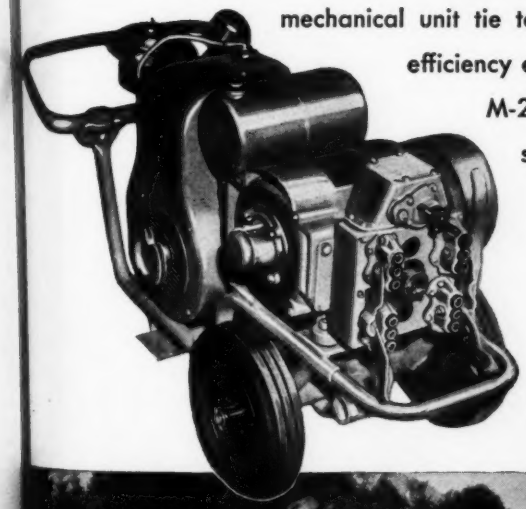
REG. U.S. PAT. OFF.

BETTER THINGS FOR BETTER LIVING
...THROUGH CHEMISTRY

DON'T OVERLOOK *the* GREATEST MULTIPLIER *of* SECTION GANG Productivity!

JACKSON UNIT TIE TAMPERS

They are not only the fastest and most reliable machines of their kind, as demonstrated on the vast majority of leading railroads, but with their interchangeable blades, the only mechanical unit tie tampers that can be quickly adapted to handle at peak efficiency each and every job regardless of varying conditions. Our M-2 Power Plant and 2 to 4 tampers constitute the ideal section gang outfit. The Power Plant is easily portable, readily handled by even the smallest gang. It generates both single-phase and 3-phase 115 volt, 60 cycle, AC, and also may be used for lighting, emergency signaling and operating other portable tools.

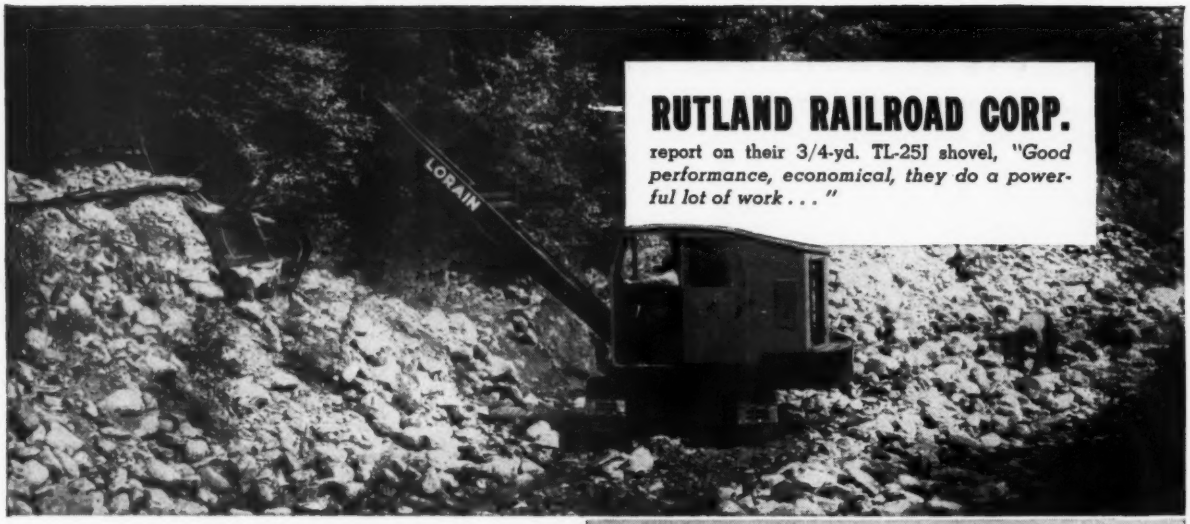


THEY'RE IDEAL FOR . . . EXTRA GANG OPERATION, TOO!

With JACKSON 4-Tamper outfits on your sections you are also well equipped for extra gang operations, for they may be grouped for any major ballasting job with results that are exceeded only by the JACKSON Multiple Tamper. Let us tell you more about them.

ELECTRIC TAMPER & EQUIPMENT COMPANY

LUDINGTON, MICHIGAN



RUTLAND RAILROAD CORP.

report on their 3/4-yd. TL-25J shovel, *"Good performance, economical, they do a powerful lot of work . . . "*

ROCKS FROM A RIVER . . . OR COAL FROM A CAR . . .

LORAIN TL

ANSWERS THE NEEDS OF THESE 2 RAILROADS!

These two railroad jobs are as different as day and night . . . but a Lorain "TL" handles them both. That's good proof that your railroad can find the right combination in the versatile "TL" Series.

One job was cleaning out a river bed along the right-of-way . . . lots of boulders and gravel to be dug and spoiled along the bank. The Rutland Railway Corporation of Rutland, Vermont selected a fast, snappy 3/4-yd. Lorain crawler shovel, Model TL25-J, for the task. The other job, at the Dalton, Illinois yard of the Chicago & Eastern Illinois Railroad Co. called for carrier speed and mobility, too . . . many fast moves to unload coal cars in a hurry. Again it was a "TL", but this time a 30 m.p.h. Lorain Moto-Crane, Model MC254, that filled the bill, and cut it, too!

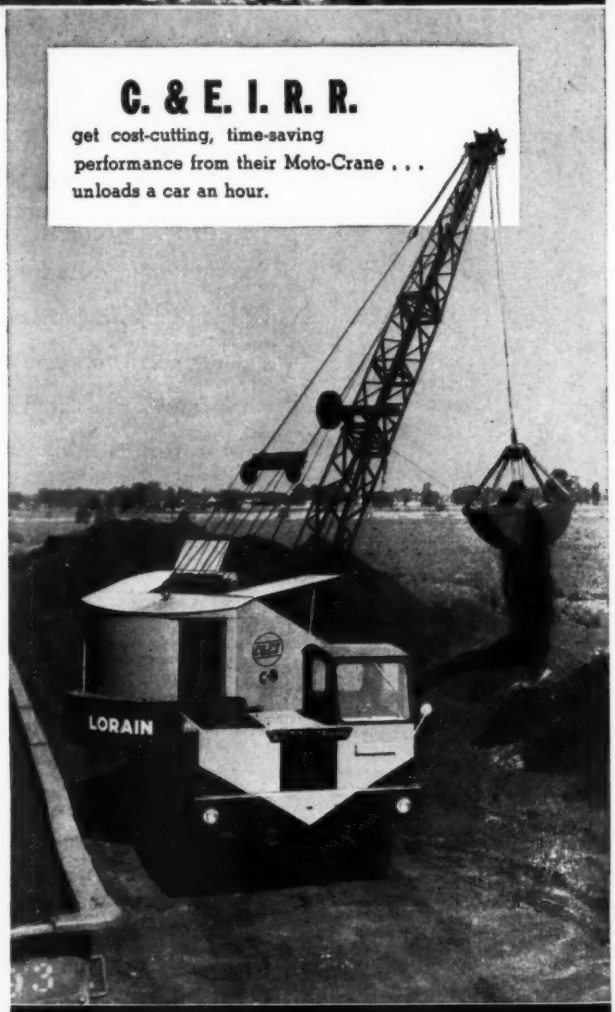
You'll find Lorain "TL's" on many railroads handling rail, laying track, building bridges, maintaining right-of-way, working on-car, off-car, on right-of-way and off. There's hardly a limit to the usefulness.

The Lorain "TL" story is worthy of your investigation. Selection is most complete — includes 5 front end types, 4 crawler mountings, 7 rubber-tire carriers . . . and there are more quality design features that only a Lorain can give you. Nearby your headquarters there is a Thew-Lorain Distributor that can add more facts and performance proof!

THE THEW SHOVEL CO., LORAIN, OHIO

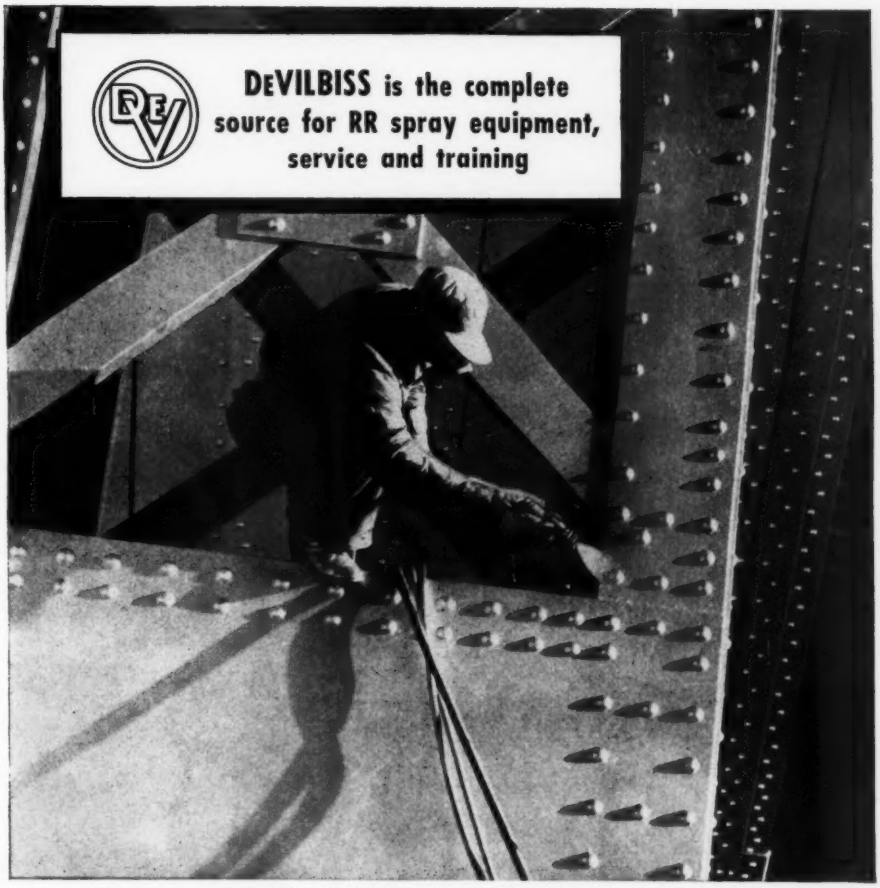
C. & E. I. R. R.

get cost-cutting, time-saving performance from their Moto-Crane . . . unloads a car an hour.



RAILROAD MEN PREFER THE NAME...

THEW LORAIN

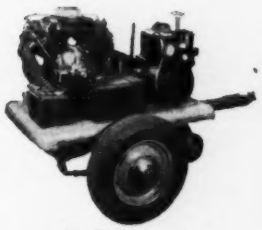


Channels, recesses, latticework on bridges are coated thoroughly, evenly, faster with DeVilbiss portable spray outfits.

Spray Guns

Material Tanks and Pumps

One-man Spray Painting Outfits



Air Compressors, Portable and Stationary

Speed maintenance paint jobs with

DEVILBISS SPRAY EQUIPMENT

Paint bridges, trestles, viaducts, sheds, signals, and structures four times faster, save up to 50% on maintenance painting costs with DeVilbiss spray equipment!

All DeVilbiss products – spray guns, material tanks and pumps, compressors, hose and connections – are designed to give you professional results. Spray guns, for example, have pretested cap-and-tip combinations to assure perfect jobs with any spray material. Reinforced at wear points, they're well-balanced, with broad, two-finger triggers and large, easily adjusted control knobs. Even a novice painter gets the "feel" of the equipment in as little as two hours and paints faster than he ever did before.

Air compressing outfits are available in a wide range of sizes and types to fit any job – from compact, one-man, general utility outfits to large 2-stage portable compressors which easily furnish air for large area spraying or air tools.

Get complete information on DeVilbiss RR spray equipment today. Contact your local DeVilbiss jobber, our branch office, or write direct to the factory.

In the tuition-free DeVilbiss school, we will train your painters and maintenance foremen on all phases of the spray method. Write for application forms and dates of these one-week courses.

THE DEVILBISS COMPANY
Toledo, Ohio

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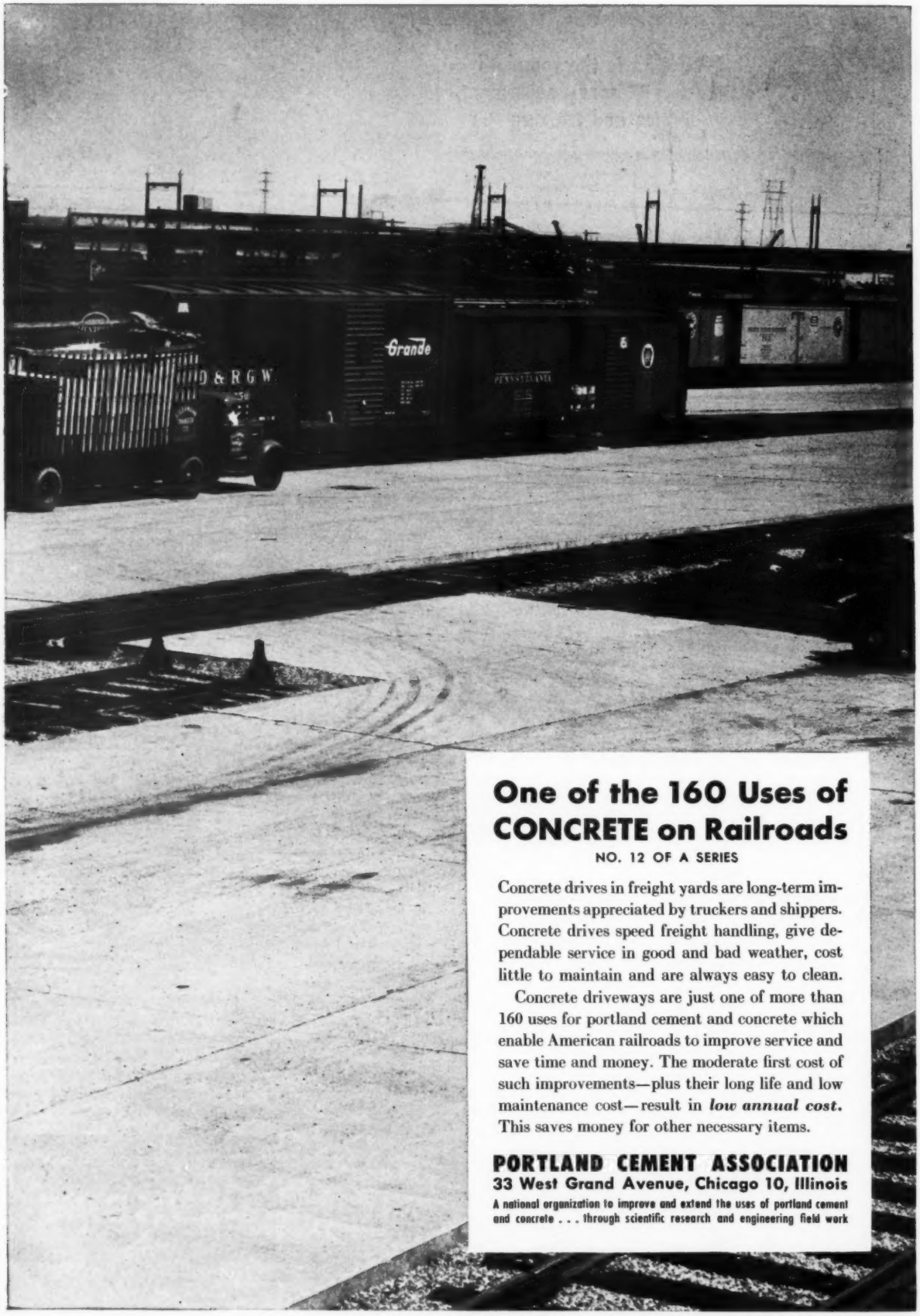
Branch Offices and Distributors in Principal Cities Throughout the United States, Canada and the World

FOR BETTER SERVICE, BUY
DEVILBISS



One of the 160 Uses of CONCRETE on Railroads

NO. 12 OF A SERIES

Concrete drives in freight yards are long-term improvements appreciated by truckers and shippers. Concrete drives speed freight handling, give dependable service in good and bad weather, cost little to maintain and are always easy to clean.

Concrete driveways are just one of more than 160 uses for portland cement and concrete which enable American railroads to improve service and save time and money. The moderate first cost of such improvements—plus their long life and low maintenance cost—result in ***low annual cost.*** This saves money for other necessary items.

PORTLAND CEMENT ASSOCIATION
33 West Grand Avenue, Chicago 10, Illinois

A national organization to improve and extend the uses of portland cement and concrete . . . through scientific research and engineering field work

Shaping up the Southern right-of-way for better drainage, this International TD-14 crawler works in close quarters along the right-of-way.

Keeping the High Iron Dry

Working on the Southern's Main Line to Mobile

The Southern Railway's main line to Mobile needed right-of-way drainage work. So, once again, the railroad put a dependable TD-14 International crawler on the job. Teamed up with a six-yard scraper, the tractor dug and hauled fill to low spots along the line.

"This tractor has been working for the railroad for a long time, and it has seen a lot of hard service in the last four years. But it really puts out a full day's work. It handles just the way I want it to in close quarters along the tracks," says A. E. Tyler, TD-14 operator for the Southern.

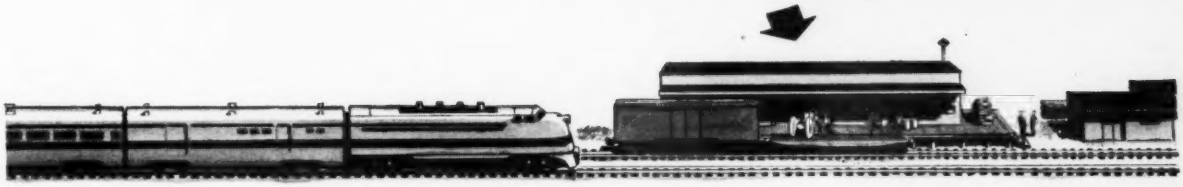
You'll hear the same story from railroad maintenance-of-way men on the high iron from coast to coast. Fast-moving, easy-handling Internationals help operators get more work done—keep working while your revenue traffic rolls by.

These are some of the reasons why International is the "Power that Pays". Let your International Industrial Distributor give you the whole story. Put "Power that Pays" to work for you.

INTERNATIONAL HARVESTER COMPANY, CHICAGO 1, ILLINOIS

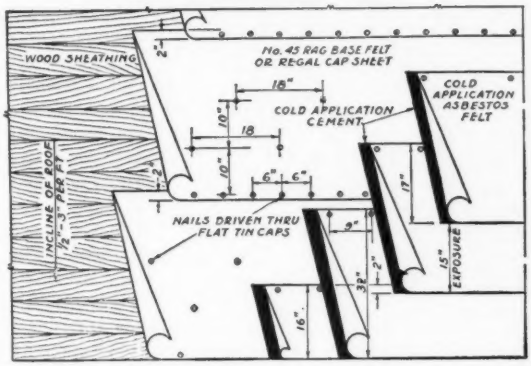
INTERNATIONAL — INTERNATIONAL HARVESTER — POWER THAT PAYS

When your hard-to-reach buildings need reroofing



...Johns-Manville Cold Application Built-Up Roofs offer economical application by company crews

FOR WOOD DECKS ONLY



Plan showing method of laying Johns-Manville Cold Application Built-Up Roof.

For further information, regarding this and other types of Johns-Manville roofs, see your J-M Representative, or write Johns-Manville Box 60, New York 16, N. Y.

WHEN reroofing is necessary on small buildings located in remote places along the right of way, it is often impractical to apply the conventional hot application built-up roof.

To meet such conditions, Johns-Manville has developed an Asbestos Cold Application Built-Up Roof. The roof is made up of special Johns-Manville Asbestos Felts that are cemented together in application with a cold applied cement brushed in place.

This eliminates the need for roofing kettles, and saves the time required to heat the binders used when hot application roofs are applied.

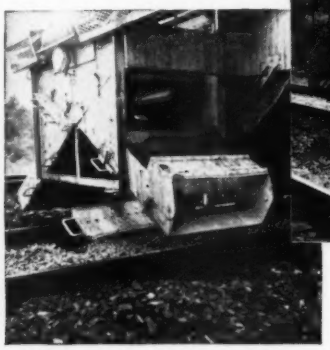
Built for long years of service, Johns-Manville Cold Application Built-Up Roofs offer an economical and practical method for roofing small new buildings and replacing those on old buildings.

JOHNS-MANVILLE JM PRODUCTS **Johns-Manville** 95 YEARS OF SERVICE TO TRANSPORTATION

he new Pullman-Standard Power Ballast Cleaner and Winch Car team, the result of three years f field research and engineering, for the first time enables railroads to clean both track shoulders t once at a rate of 1000 to 1200 feet an hour with the labor complement of only four men. Both nits have completely automatic controls located in their cabs. A triple-deck screen provides separate leaning of large and small ballast, thus providing more thorough ballast cleaning and less loss f "fines." (Screen mesh sizes may be changed to meet specifications.) A rotary lift wheel carries he dirt from the screen discharge to the dirt conveyor. The 140° arc of the dirt conveyor is controlled from the cab, allowing distribution of the dirt into either an adjacent or following car or ruck or on the berm of either shoulder, or beyond the drainage ditches.

Each of the revolving augers are self-inserting and bore into the ballast, break it up, and deliver the dirty ballast to chain buckets which then convey the ballast to a shaker screen for cleaning. The elevators and auger are operated hydraulically and can be raised or lowered independently. They will cut to any desired depth 8 to 10 inches below the tie base, depending upon the length of the tie.

Self-aligning plows, one in back of each auger, follow the irregularly protruding tie ends to undercut and extrude the hardened seal which fringes the tie base, thus performing an operation essential to good track drainage. The depth of these plows can be adjusted manually to meet local conditions. The cleaned ballast falls into place just in back of these plows as the Cleaner moves forward.



Simple preset distributing mechanism automatically puts the clean ballast back on the track in any location and in the proportionate amounts desired, thus requiring only two laborers to follow in rear of the machine to finish distribution and clear ties. **The Power Winch Car**—its 30,000 lbs. of pulling force enables the Cleaner to push through the most cemented ballast. It runs out ahead of the Cleaner, unwinding its cable and anchors itself in place with two, independent, self-aligning rail clamps, then winches in the cable. The clamps, designed not to slip on oily or peened rail, will function on rail of any gauge, type or condition of railhead without marking the rail. The 1000-foot, doubly looped 7/8" cable, with a breaking point of 60,000 lbs., is wound on a drum equipped with an automatic slip clutch that can be set from 0 to 30,000 lbs. so that it slips when obstacles are met. The cable can be unwound completely in 2 minutes and can be wound in at 600 to 5800 feet an hour.

SUBSIDIARY OF

ROAD & TRACK EQUIPMENT DIVISION **PULLMAN**

BIRMINGHAM • PITTSBURGH • NEW YORK • WASHINGTON • SAN FRANCISCO • 79 EAST ADAMS STREET

Four men and new Power Cleaner

An operator for each machine and two laborers—this is all the manpower you need to clean ballast with the Power Ballast Cleaner and Winch Car team. But savings on labor are not all. You'll find that the work rate of 1000 to 1200 feet an hour will give even more savings because this versatile production team *cleans both shoulders simultaneously* to a depth of eight to ten inches below the tie base. Even in multiple track territory, the shoulder plus half the six foot are cleaned with just as few workers and at the same high production rate. On previously cribbed track, both crib and shoulder ballast of both shoulders are cleaned at 600 to 900 feet an hour, depending on how cemented the ballast is.

clean both track shoulders at once

Everything about this work team is designed to give you the highest production rate possible in the track time available. Set-up time takes only a few minutes once each work trick. Both units have powered, lateral set-offs and running speeds of 25 mph. in forward or reverse. Since each machine can run independently or tow the other, power failure in one will not tie up your track or delay traffic.

The Power Winch Car, developing up to 30,000 pounds of tractive force, assures effective operation even in the most cemented ballast, such as is found at grade crossings, and its exclusive rail clamping device, regardless of rail conditions, gives positive anchorage (without marking rail) with a full load on the cable.

at 1000 to 1200 feet an hour

You can prove to yourself on your own track just how this Power Ballast Cleaner team cuts labor costs, makes maximum use of track time without the use of "dead" track or work train, and gives you high quality production at low cost, by choosing one of these four ways: (1) rental for six months with option to buy and all rental payments applied to purchase price; (2) straight rental for six months; (3) deferred quarterly payments over a period of one to three years; (4) outright purchase.

When in Chicago, you are cordially invited to visit our Michigan Avenue Industrial Showrooms.

PULLMAN INCORPORATED

STANDARD CAR MANUFACTURING COMPANY

CHICAGO 3, ILL. • THE HOLDEN CO., LTD., MONCTON • MONTREAL • TORONTO • WINNIPEG • VANCOUVER

DOW SODIUM TCA 90% CONTROLS GRASS IN BALLAST

ESTERON BRUSH KILLER controls brush and weeds along the right-of-way

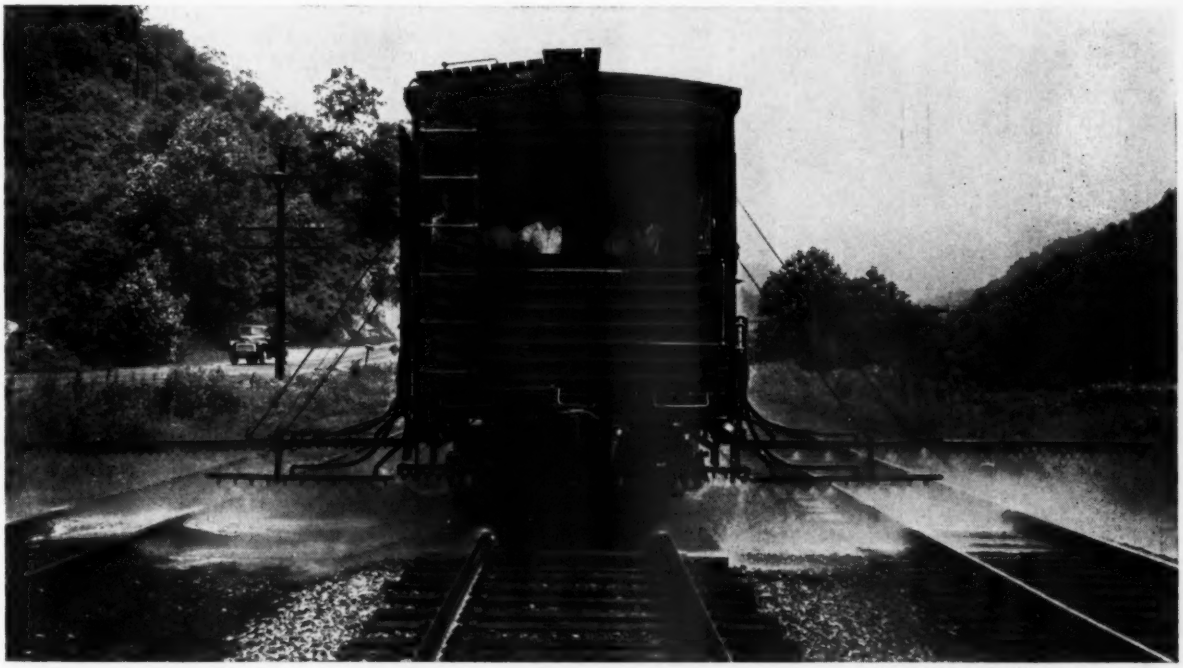


Photo courtesy of Spray Services, Inc.

Dow's proved grass, weed and brush killers give railway maintenance men and spray service companies efficient vegetation control along roadbeds and right-of-ways.

Grass in ballast, with the attendant hazard of churning tracks, is no problem when Dow Sodium TCA 90% is applied as shown. It may be used alone or with other weed killers in a combination application to control both grass and weeds.

Esteron® Brush Killer has given outstanding results in all sections of the country. It contains 6.31 lb. per gallon (4 lb. acid equivalent) of the more powerful low-volatility esters of 2,4-D and 2,4,5-T. Another Dow product—Esteron 245, containing 2,4,5-T esters—is effective against poison ivy and other 2,4-D resistant species. It is successful also for year-around stump treatment and basal bark application to control unwanted trees along the right-of-way.

Ask your supplier or write for literature. THE DOW CHEMICAL COMPANY, *Agricultural Chemical Department*, Midland, Michigan. In Canada: Dow Chemical of Canada, Limited, Toronto, Canada.

you can depend on DOW AGRICULTURAL CHEMICALS

DOW

RUST-OLEUM lasts longer ...applied directly over rusted surfaces!

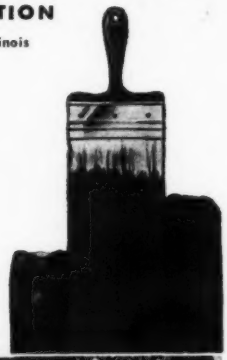
STOP RUST! with RUST-OLEUM

The Practical, Sensible Answer To Your Rust Problems!

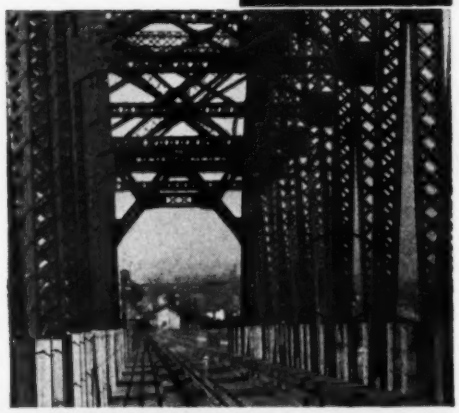
Here's what RUST-OLEUM can do for you: (1) Cut your maintenance costs by saving you time, labor and money . . . because RUST-OLEUM may be *applied directly over rusted surfaces* by brush, dip or spray after wirebrushing and scraping with sharp scrapers to remove rust scale and loose rust! Costly sandblasting and chemical pre-cleaning are not usually required. (2) RUST-OLEUM *lasts longer* applied over surfaces already rusted. (3) RUST-OLEUM'S tough, elastic, rust-resisting film protects signal equipment, rolling stock, towers, bridges, metal buildings and all rustable metal surfaces. Get the complete story from a RUST-OLEUM Railroad Rust Preventive Specialist! See why major railroads throughout the nation rely on RUST-OLEUM.

RUST-OLEUM CORPORATION

2548 Oakton Street • Evanston, Illinois



May be applied directly over rust

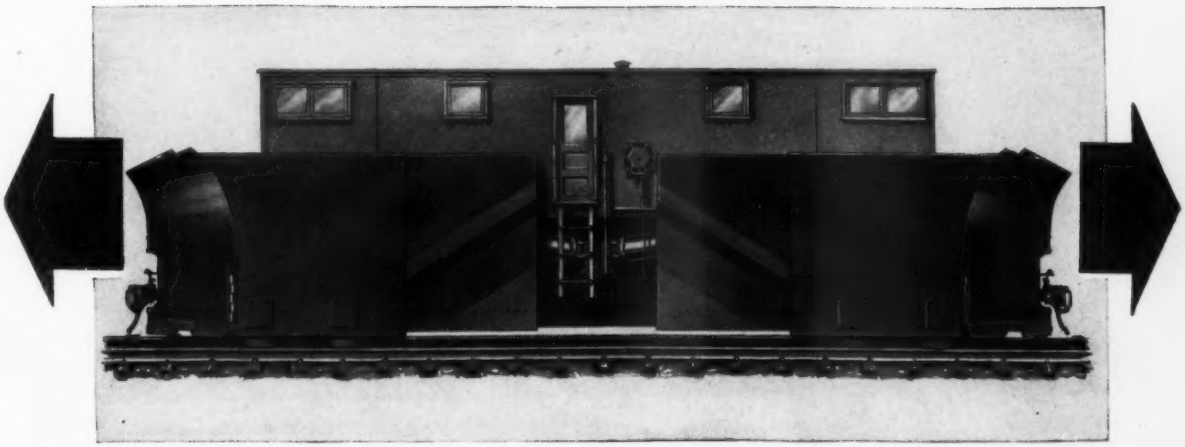


Available in all colors, Aluminum and White

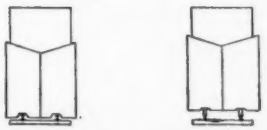
Write for your **FREE COPY** *of the* **RUST-OLEUM** *Catalog,* **TODAY!**

PLOWS ← **BOTH WAYS** →

ELIMINATES COSTLY TURN-AROUND TIME!

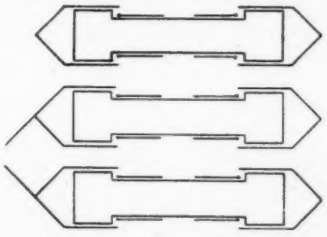


The NEW Jordan "TWIN-TYPE" SNOWPLOW

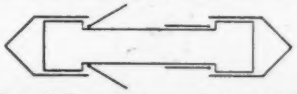


Front snowplow flanges even below rail tops—leaves clean rail surface for better traction.

Here's the front snowplow in travelling position—high above rail tops.



Adjustable front snowplow wings enable you to plow to both sides at once, or to a single side.



Pneumatically operated snow wings on sides of car extend way out—provide a wide path for equipment clearance.

Here is the answer to the trend away from use of turntables and similar turn-around facilities: the new Jordan "Twin-Type" Snowplow. It's double-ended . . . eliminates costly turn-around time . . . and each end has all the rugged reliability and operating features that have made Jordan snowplows famous.

- **Arrow-ended welded underframe for maximum strength, even out to tip of front snowplows.**
- **Cab is insulated; has provision for heating if desired.**
- **Controls at each end of cab.**
- **Maximum visibility and comfort for operators.**

Like to know more? . . . Use this handy coupon.

JORDAN SPREADERS • DITCHERS • SNOWPLOWS

O. F. JORDAN COMPANY • East Chicago 3, Indiana

Please send free "Twin-Type" Snowplow data.

Name & Title_____

Company_____

Address_____

City-Zone-State_____

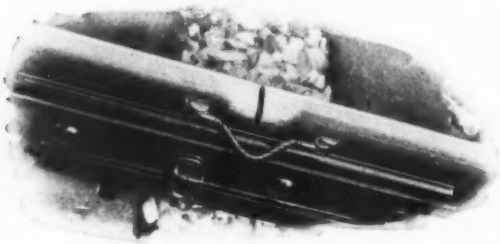
WHAT ARE YOUR REQUIREMENTS FOR END-HARDENED RAIL

Adequate Hardness?

Desired Toughness?

Correct Hardness Pattern?

Best Depth of Hardness?



You get all these with OXWELD'S *methods for oxy-acetylene rail-end hardening*

OXWELD'S methods of flame-hardening are backed by 15 years of experience. During that time millions of rail ends have been treated by this tried-and-tested method.

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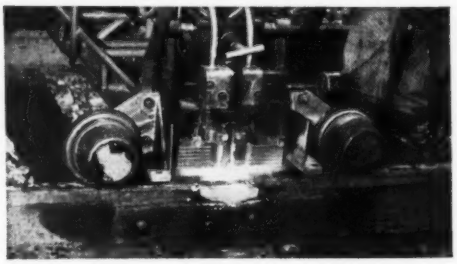

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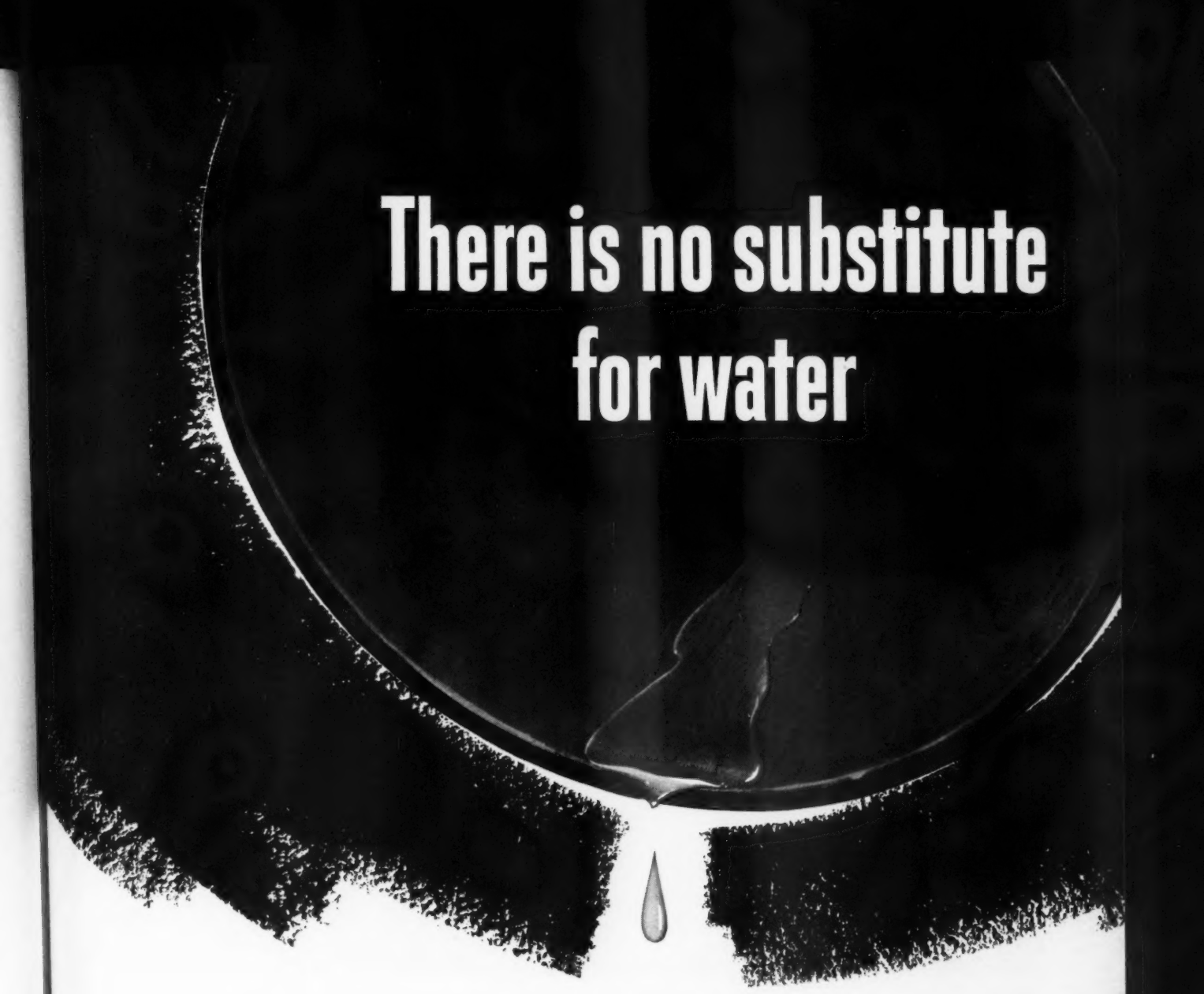

. . . and there is no substitute for experienced engineering in developing a dependable water system

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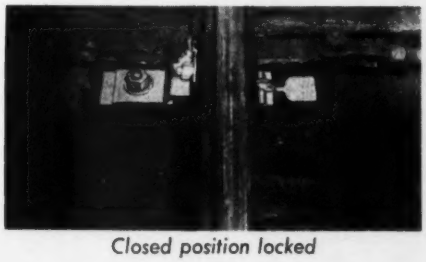

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General Office
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No. 292 of a series

RAILWAY TRACK and STRUCTURES

SIMMONS-BOARDMAN PUBLISHING CORPORATION

79 WEST MONROE STREET
CHICAGO 3, ILL.

Subject: Our Renewal Rate

April 1, 1953

Dear Readers:

You may be interested to know that you are a subscriber to a magazine having a subscription renewal percentage that is among the highest in the country for magazines of this or any other type. To be exact our subscription renewal rate for the 12 months ending April 30, 1952, was 88.88 per cent. This is the official figure as audited by the Audit Bureau of Circulations and published in its latest circulation statement for this magazine. What this means is that 88.88 per cent of the subscriptions that expired during the 12-month period were renewed. Specifically, there were 6,742 expirations during that period, of which 5,752 were renewed.

Very few trade magazines have renewal rates equalling or exceeding ours. Naturally we are proud of our rate. However, in discussing its significance with you, we will endeavor to keep our pride from interfering with objective thinking. First, and of greatest importance in my opinion, it indicates the unusual character of our readership. Railroad maintenance men, in my estimation, have a greater devotion to their responsibilities than any other group of people I know. This devotion seems to me to be compounded of about equal parts of interest, enthusiasm, conscientiousness and a realization of the importance of their work. It manifests itself in a desire to do the best job of which one is capable. Reading this magazine is a means that may be used to that end; hence, the unusually large proportion of our readers who renew their subscriptions each year.

Our high renewal rate is also an indication to me of the fact that, for the most part, we are giving our readers the kind of information they want to have. I'm afraid this may sound a little like braggadocio; actually I make the statement with all sorts of mental reservations and qualifications. No one recognizes our imperfection more keenly than we do. I don't recall ever having been completely satisfied with any particular issue of the magazine.

Frankly, I am not satisfied with the renewal rate, as high as it is. Not counting those subscribers who retire, pass away or leave railroad service each year, there are perhaps some who fail to renew their subscriptions because of disappointment over the contents of the magazine. If we are to push our renewal rate even higher (and that is our goal) our efforts must be aimed at this group. This means that we must strive for a higher degree of perfection in giving them the kind of information they feel is needed to maintain their interest in the magazine. To that objective we will continue to dedicate our efforts.

Yours sincerely,

Merwin H. Dick

Editor

MHD:lw

Members: Audit Bureau of Circulations and Associated Business Publications

One man distributes ballast at 1000 ft. per hour... *with help of TIMKEN® bearings*

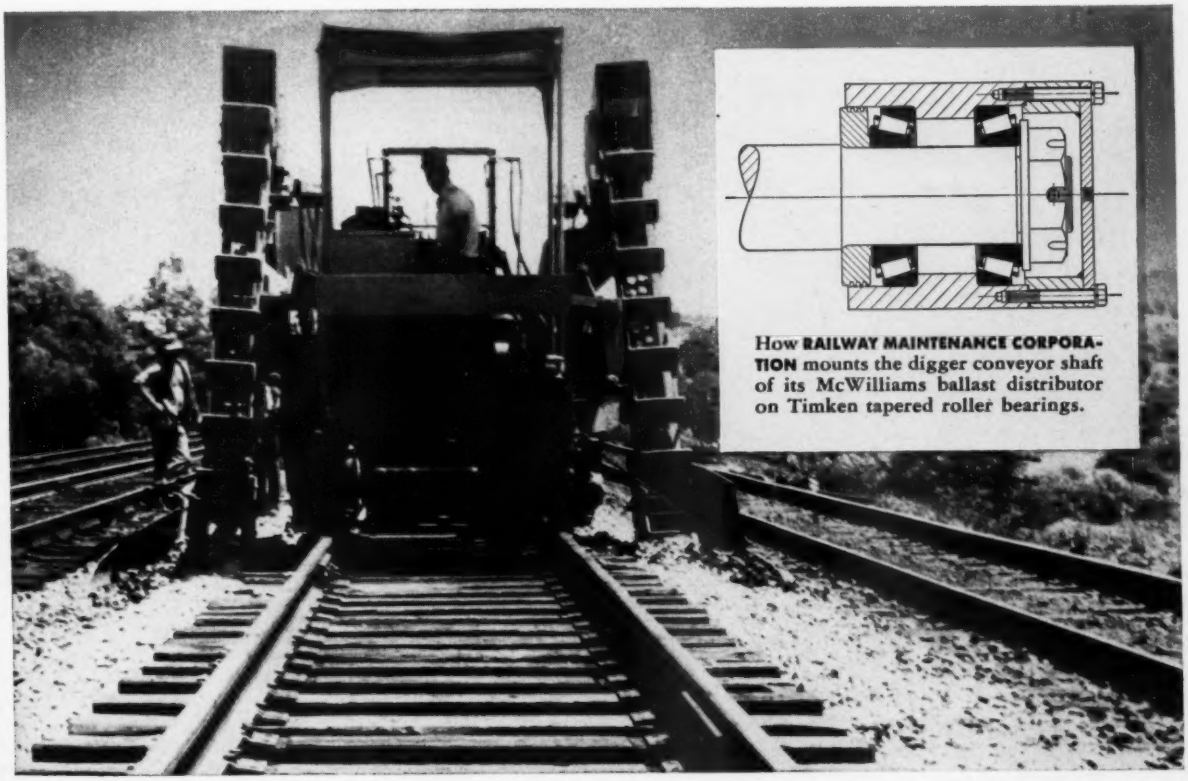
THIS new McWilliams Ballast Distributor picks up ballast and places it in proper amounts inside and outside rails for tamping. Operated by one man, it works at speeds up to 1,000 ft. per hour. To keep it on the job with minimum time-out for maintenance and repairs, 16 Timken® tapered roller bearings are used in the journal boxes, digger shafts, and Dodge-Timken pillow blocks located on the digger conveyors.

The tapered construction of Timken bearings enables them to take radial and thrust loads in any combination. Line contact between rollers and races gives them extra load-carrying capacity. Friction is reduced because Timken bearings have true rolling motion and incredibly smooth surface finish. Wheels turn smoothly, higher speeds are possible, wheel gage is accurately maintained.

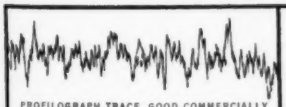
Closures are more effective because Timken bearings hold the distributor's housings and shafts concentric. Lubricant is kept in, dirt and moisture are kept out.

For top value, specify Timken roller bearings, for all the equipment you build or buy. The Timken Roller Bearing Company, Canton 6, Ohio. Canadian plant: St. Thomas, Ont. Cable address: "TIMROSCO."

This symbol on a product means its bearings are the best.



How **RAILWAY MAINTENANCE CORPORATION** mounts the digger conveyor shaft of its McWilliams ballast distributor on Timken tapered roller bearings.



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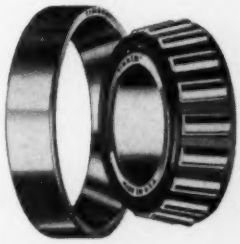
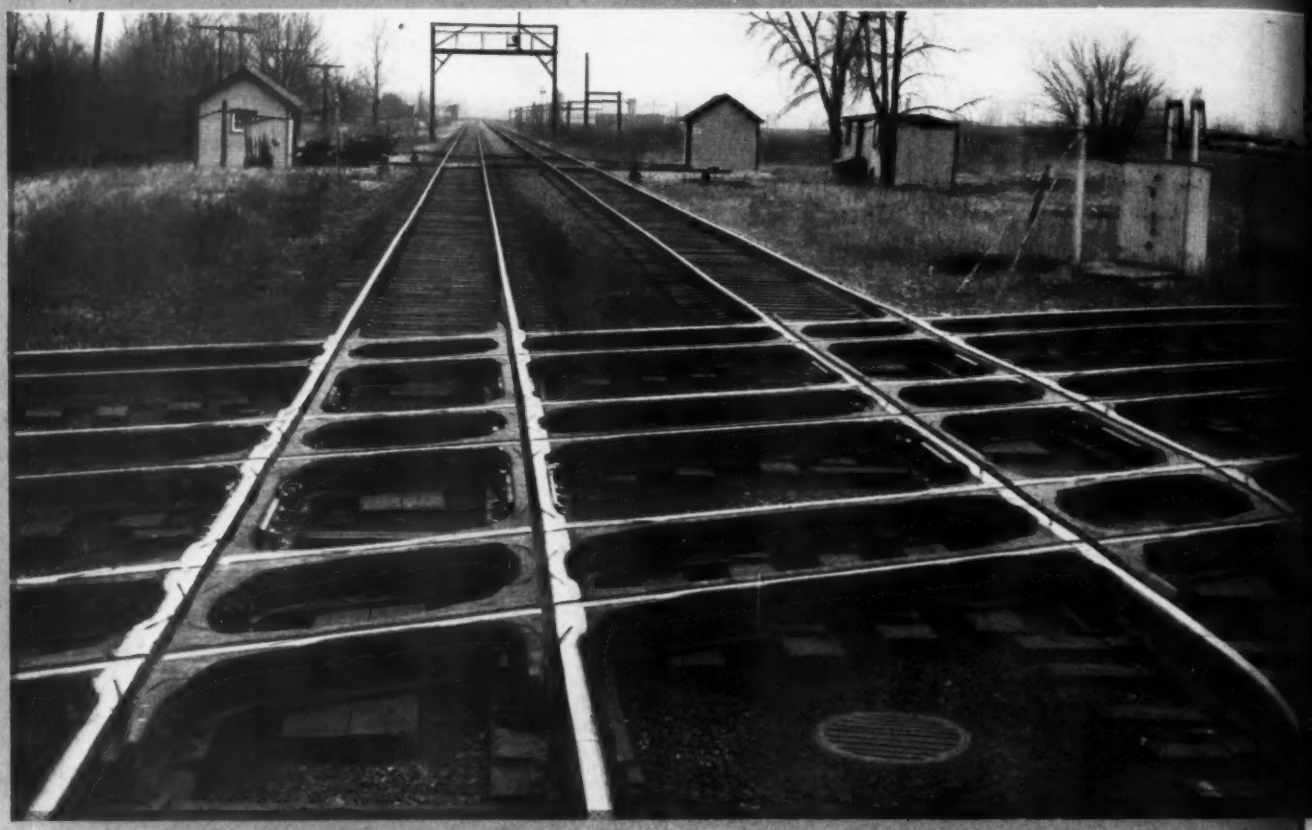
TAPERED ROLLER BEARINGS



NOT JUST A BALL — NOT JUST A ROLLER — THE TIMKEN TAPERED ROLLER — BEARING TAKES RADIAL AND THRUST — LOADS OR ANY COMBINATION

DEPTH HARDENED Manganese Steel



Greater resistance to wear -- smoother riding -- greater strength and safety -- lower maintenance costs - PATENTED

DEPTH HARDENED MANGANESE STEEL CROSSINGS were introduced in 1936 by the RAMAPO AJAX DIVISION of the AMERICAN BRAKE SHOE COMPANY who since then have supplied hundreds of crossings of this type that have established enviable service records by their outstanding performance. The RACOR method of depth hardening has assured a greater resistance to wheel wear and smoother riding and has been a large factor in lowering crossing maintenance costs during these fifteen years.

RACOR depth hardening is a special process that provides the initial work hardening to manganese steel crossing castings in the shop prior to their installation in track. A Brinnell hardness in excess of 400 is attained that defers the flowing of the metal at the corner intersections and makes possible an increase of over thirty per cent in the service expectancy of manganese crossings.

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We are continually striving through RACOR field engineering and BRAKE SHOE laboratory research to produce the very best in crossings and other track work specialties to meet the most exacting demands of today's traffic problems.

RACOR INTEGRAL BASE DEPTH HARDENED construction can be supplied in SOLID and INSERT A.R.E.A. manganese steel crossing designs.

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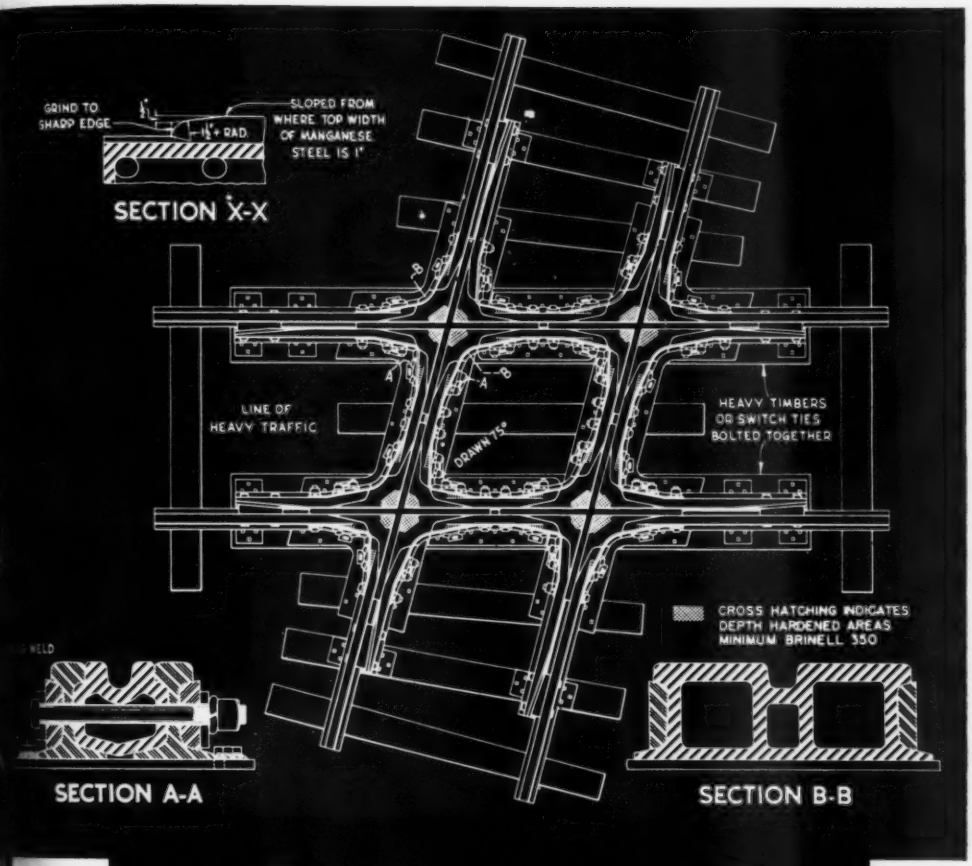
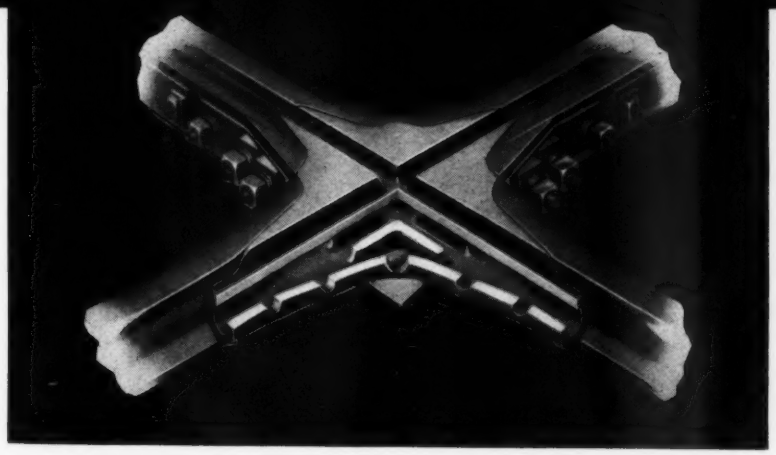
Crossings SINCE 1936





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America's most complete *of track* *specialties*

RACOR STUDS

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Wherever the choice of maintenance equipment is based on performance—there you will find Fairmont on the job. For every product that bears the Fairmont name is deliberately built to perform with the greatest possible thoroughness, efficiency and economy. Recognition of this unique manufacturing policy is reflected in the fact that, today, well over half of the railway motor cars in operation are Fairmonts. One of these is the A8 Series A Heavy Duty Gang Car—shown above. Combining remarkable ruggedness with unusual versatility, it is designed to meet the requirements of any conceivable heavy hauling job. With its four-wheel, propeller shaft, and enclosed gear drive, it is capable of carrying up to 14 men . . . and, in second gear, can haul as many as 14 trailers carrying 50 tons up a one-half per cent grade. The Fairmont A8 Series A Gang Car, like every piece of Fairmont equipment, is the standard of performance in its particular field of operation.

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RAILWAY TRACK and STRUCTURES

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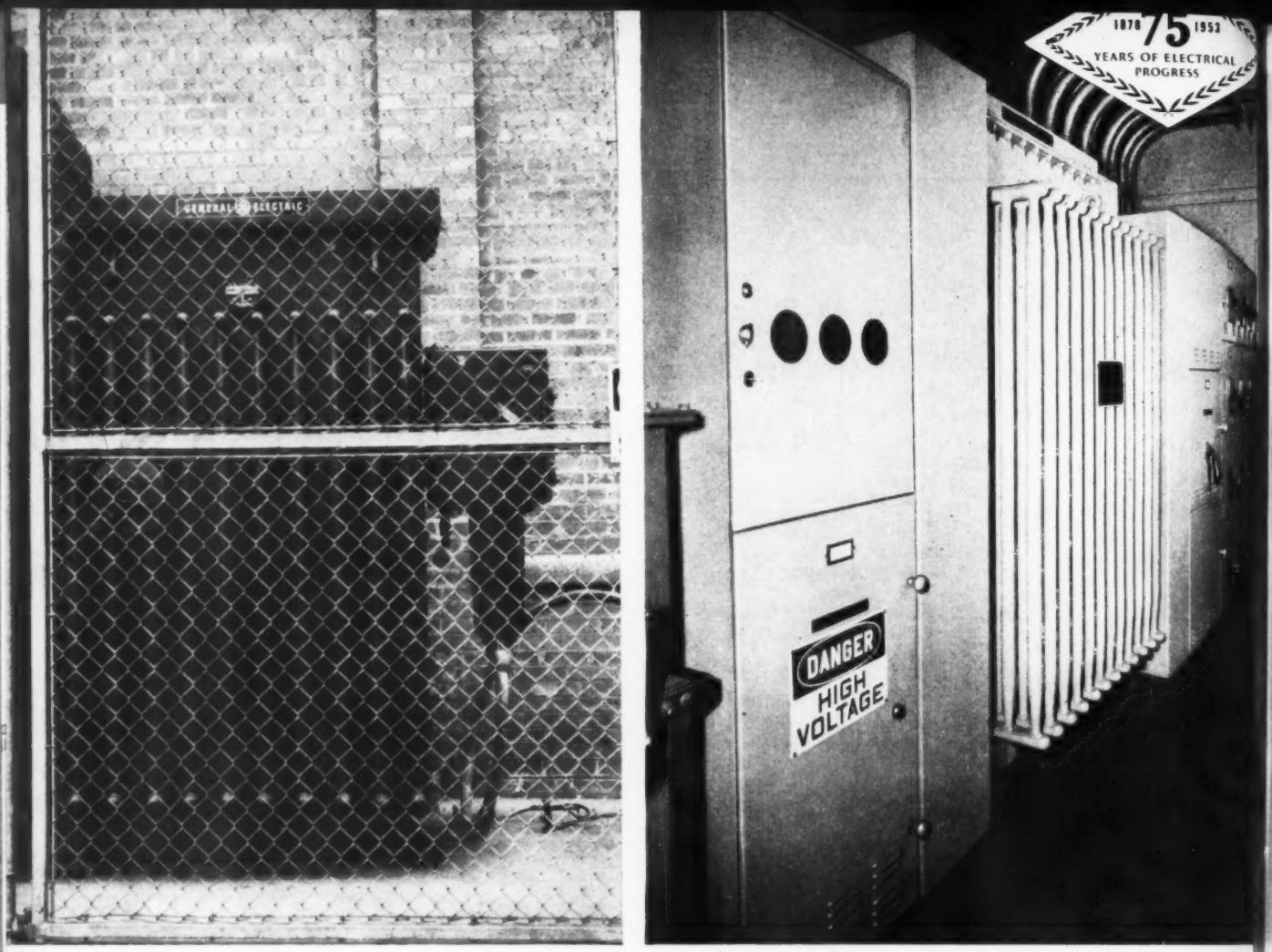

Completely metal-enclosed G-E load-center unit substations, like this modern 500 KVA unit (left) outside the diesel-repair shop and this compact 750 KVA unit (right) outside the armature shop, help supply power to the remodeled Collinwood diesel-repair center.

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RAILWAY TRACK and STRUCTURES

Editorial Comment

A Contrast —

In Problems of Yesterday and Today

Doubtless many maintenance engineers of today have, at one time or another, compared their lot with that of their predecessors of 50, or 75, or even 100 years ago, and as a result of such reflections have arrived at certain comparisons between the present and the past. Whatever other purposes this habit of reflection and comparison may serve, it can be helpful in bringing into sharper focus the nature of the problems facing maintenance men today.

From the very beginning of the railroad industry the track engineer recognized that the elaborate theories of engineering design which he had learned in college or from books were of practically no help in arriving at the most efficient and economical design for the track structure, or its component parts. The forces acting on the track were susceptible to theoretical analysis only to a very limited extent. The best that the track engineer could do was to use a combination of theory and common sense in arriving at a general concept of design with the idea of making improvements or refinements from observations of the structure in service.

In the early years, therefore, the design of the track structure was largely a matter of judgment on the part of the engineer. Furthermore, because in those years there was very little opportunity for the exchange of information between the engineers of different railroads, it was only natural that wide variations in practice should develop.

There is one other aspect of the early days of railroading that is germane to this discussion. There was generally an abundance of materials and labor, both relatively cheap. In other words, the conservation of materials and of manpower was among the lesser problems of those days.

The situation today is in strong contrast with that outlined above. Through evolution and cooperation, aided by more advanced engineering knowledge and applied research, a highly efficient track structure has been developed which varies only in relatively minor details between different railroads. In other words, the modern track engineer has inherited a track structure which can be accepted as adequate and efficient for carrying the loads imposed upon it. He no longer needs to exercise his judgment in this sphere.

But new problems have replaced the old. The days of plentiful labor and materials have long since passed. The emphasis today is on the development and use of measures for making the track structure and its component parts more durable and for enhancing the efficiency of maintenance labor. In this sphere the application of inventive genius and research in the development of machines and improved materials has done wonders. Every track man is familiar with the wide range of machines that have been made available to help him in his work, and he need only to review the reports on research projects of the AAR's Engineering Division to find out what is being done to develop better materials and devices.

In fact, the problem is no longer primarily one of development but of the *application of available knowledge*. Each railroad must adopt and apply those developments and findings that are best suited to its peculiar conditions and problems. Because of the multiplicity of alternatives from which to choose, this is a field of endeavor that requires engineering judgment in its highest form. Relatively speaking, perhaps the problems of the early engineers weren't so tough after all.

Editorial Comment

GOOD ACCIDENT RECORD—

Is Promoted by Big Work Programs

TWENTY-ONE PER CENT fewer train accidents "chargeable to defects in or improper maintenance of way and structures" were reported to the Interstate Commerce Commission in the first eleven months of 1952 than during the same period in 1951. Furthermore, it seems certain that the total for the year, when published, will be less than half the number of accidents attributed to "track and structures" causes in 1945 and 1948, and only a little more than the number occurring in 1949, the year of lowest record since the low-traffic Thirties. Such an improvement speaks well for the safety factor being built into the tracks and bridges of Class I railroads, as well as for the care and diligence with which supervisory officers and their men ferret out potential defects through adequate inspection and then take corrective action when it is found necessary.

Even more important, this accident yardstick by which the effectiveness of maintenance work can, to some extent, be measured has placed its stamp of approval upon the revised methods placed in effect by many, if not most, roads during the past several years. New gang organizations, new ways of inspecting tracks and structures, and new or improved roadway machines can now be said to have passed their crucial tests. They took over a mammoth job at the advent of the 40-hr. week and have not only accomplished more but, in view of the improved train-accident record, must have done it better.

One of the brightest aspects of this favorable situation is the prospect that the number of track-cause accidents will be reduced still further during 1953, primarily because of larger programs of work scheduled. Reports to *Railway Track and Structures* from representative roads indicate that the roads plan in 1953 to install 51 per cent more rail, renew 4.8 per cent more crossties, raise 13 per cent more track and apply 11 per cent more ballast than they did in 1952. When it is realized that 68 to 76 per cent of all track-cause train accidents are attributed to defects in rails and joints or in frogs and switches, this year's big rail replacement program, alone, offers a bright prospect of reducing such accidents at an even greater rate than all factors did last year.

These facts are especially significant when considered in the light of the out-of-pocket expense caused by train accidents. For instance, it is a matter of record that derailments, collisions and miscellaneous train accidents annually damage railroad property to the extent of $25 million to $35 million, and cause an additional loss and damage to lading of $4 million to $5 million. The damage to way and structures, alone, amounts to $5 million to $8 million every year.

In view of this waste of money, as well as the lost effort expended in repairing the property damage, it is clear that nothing should be allowed to prevent the railroads from laying as much rail or doing as much other work as they have planned for this year. Here is an opportunity that offers large potential benefits. If the door is kept open to this opportunity, the accident record will remain favorable, loss and damage will be reduced, and there will be less interruption of programmed work.

ENGINEERS—

Are They Being Used Wisely?

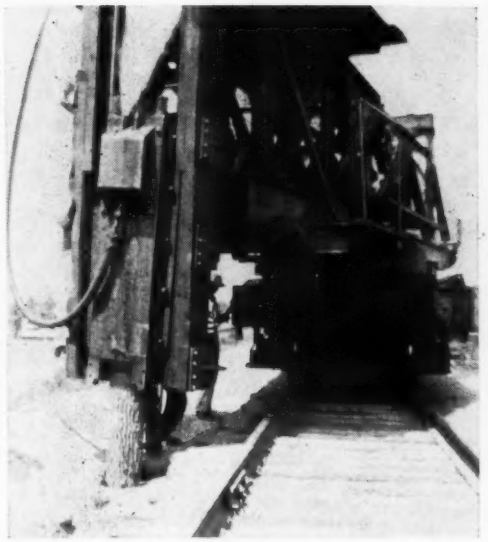
A GREAT DEAL of concern has been expressed during the last few years about the scarcity of engineering graduates who are available for work on the railroads. Certain steps have been taken by railroad officers, both individually and collectively, to stimulate a greater interest among college undergraduates in railroading as a career. Even so, few railroads will say that they presently employ enough engineering graduates to fulfill their requirements.

In view of this situation it is pertinent to inquire whether the railroads, in all cases, are making the most effective use of the engineering talent already on their pay rolls. Observations indicate that on at least some roads the answer to this question would be on the negative side. You can walk into almost any engineering office and find engineers working on routine matters that require very little engineering knowledge and which a non-technical employee, or even a clerk with some initial instruction, could handle.

Engineering officers might take a look around their own offices. Are their engineering assistants working on assignments that could be done satisfactorily by non-technical help? Could someone other than a college graduate take over these duties and thus relieve the engineers for more specific engineering projects?

Another thing to be considered is that engineers get bored with routine work; they like to have opportunities to apply their own initiative and engineering knowledge. If these desires are stifled, the railroad may lose the services of these men—even those having several years of railroad service—to outside industries. So many instances of this kind have happened that they are no longer a rarity. Those engineers who do stay on the job, chained to routine work, frequently do so with impaired morale. And it doesn't help matters for them to realize that, through lack of use, they may be losing some of their engineering know-how.

Railroading is fascinating work. It used to be that when a man started working for a railroad he seldom quit. This was especially true in the engineering field where many varied situations arose which called for ingenuity in meeting them and yet created a feeling of accomplishment when satisfactorily handled. These interesting situations are still with us today. So it should not be difficult to keep contemporary engineering employees happy, if they are put to work on assignments for which they have prepared themselves through years of study.



Frisco Drives Poles and . . .

Ties Them Together with Old Rails to . . .

Stabilize Sandy Roadbed

By F. N. Beighley

Roadway Engineer
St. Louis-San Francisco
Springfield, Mo.

An "underground bridge" structure, installed by the St. Louis-San Francisco to check roadbed instabilty at locations bordering the Mississippi river, has proven successful to the tune of some $52,500 savings in annual maintenance-of-way expenditures.

• An example of the savings that can be effected by roadbed stabilization, using a method especially designed to meet the particular condition, is provided by recent experience on the St. Louis-San Francisco. Approximately 90 miles of main track between St. Louis, Mo., and Memphis, Tenn., on the River Division are located adjacent to the steep hills and silica sand bluffs along the west bank of the Mississippi river. The soil throughout this region is composed mainly of silty sand with a very low percentage of clay. Because of its low plasticity index, the soil becomes quite unstable during periods of excessive rainfall. At such times, this condition is aggravated and water from the high-level stage of the river results in the complete saturation of the roadbed and embankment.

As long as the river stage is relatively high, the groundwater level in the embankment is sufficiently high to counteract the hydraulic gradient of the bank water beyond or up hill from the track. Thus, the soil remains in a semi-stable state. However, when the stage of the river falls, the water level of the river decreases more rapidly than the level of the ground water. The bank water consequently tends to level off, and in so doing builds up a considerable hydraulic pressure against the unstable roadbed soil. This results in a tendency for the embankment, and the entire track structure, to slide toward the river.

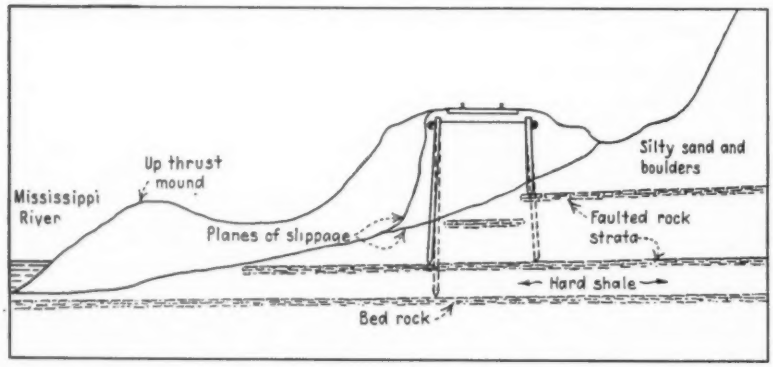
The road has used considerable quantities of stone, boulders and chat, and has employed much labor in the area to fight the situation. However, only temporary relief was obtained, and no amount of permanent stabilization was realized from the expenditures made.

The primary aim in embankment construction is to have the soil of such stability that it will amply support all loads transmitted to it through the track structure. In this case, to determine the character of the soil and any possible rock footing, soundings were made and soil samples taken at those locations which had proved the most troublesome. It was discovered that bed rock, overlaid with shale and faulted stratified rock formations, existed 18 to 20 ft. below the track, into which steel pile points could be driven for anchorage.

Consequently, it was decided to drive native timber poles, between 18 and 22 ft. in length, with steel points attached, into the embankment and to an anchor in the rock footing or to a bearing on one of the faulted strata. These poles, having a minimum diameter of 8 in. at their tips, were driven, with a slight batter, on either side of the track at 3-ft. centers, 12 to 15 in. from the ends of the ties. The poles were driven until their tops were 12 in. below the base of the rail, after which ballast was trenched away around and between the poles to a depth of an additional 12 in. Lengths of 56-lb. rail were placed in the trenched-out region and base-spiked to the sides of the poles. Tie rails, of the same rail section, were then placed across the top of the longitudinal rails, upside down, four to each side-rail panel (see accompanying drawing). The tie rails were of sufficient length to permit cutting away about 8 in. of the web and base at each end.

Frisco Drives Poles to Stablize Roadbed . . .

AFTER the poles had been driven to a depth of 12 in. below the base of the rail, the ballast was removed around and between them. The longitudinal rails were then placed in the trench and spiked to the poles.



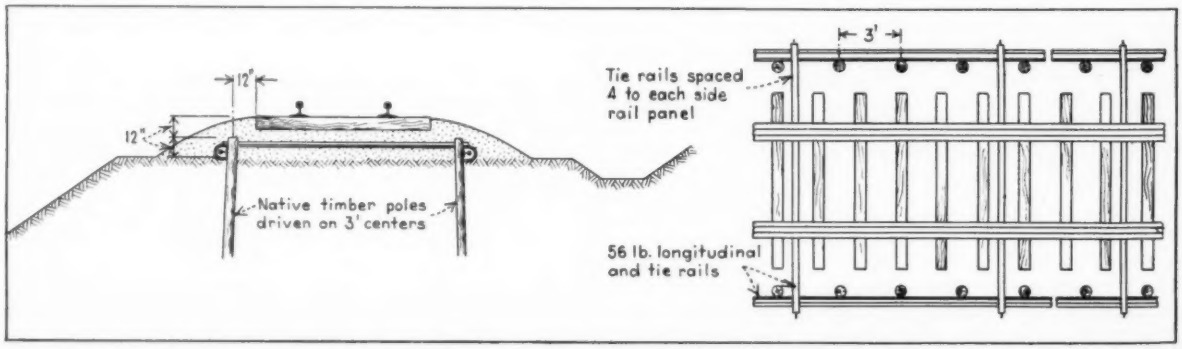
CROSS SECTIONAL VIEW showing the geological formation. Poles were driven until anchorage in a rock stratum was attained. Pole tops were then cut off.

The protruding 8-in. sections of rail head left remaining at the ends of the tie rails were heated to a cherry red with an acetylene flame and hammered with a maul to form a hook which extended downward and engaged the head of the longitudinal rail. When this operation was completed on one end of a tie rail, the other end was given the same treatment and the tie rail drawn tight between the longitudinal rails. The tie rails were worked out-of-face in order to keep both sides of the operation as nearly even as possible. After the tie rails had been installed and the open trench backfilled, the track was given an out-of-face surfacing, using a 2-in. raise. The track section was finished by dressing with new chat ballast.

The procedure followed resulted in the establishment of what might be termed an "underground bridge" structure, consisting of two-pile bents driven on 3-ft. centers, capped and strung with lengths of rail, for the entire length of the slippage area.

"Retaining Wall" Action

It is felt that this method results in stabilization through the action of perhaps three factors: First, the loading on the subgrade is, of course, distributed over a much greater area through the medium of the skin friction of the poles; secondly, the driving of the poles results in a decided compaction of the unstable material, squeezing out some of the moisture so as to form a core wall which is more impervious and capable of carrying larger loads per square foot than in its natural condition; and, finally, it is believed that the combination of the poles anchored in the rock strata and the compacted core wall serves to resist the lateral pressure moving from the bank toward the river, in much the same manner as



PLAN AND SECTION showing the manner in which the rails and poles were positioned beneath the track structure. Poles were fitted with steel tips which provided anchorage in the stratified rock formation below the roadbed.

BASE AND WEB were cut off the ends of the tie rails with a torch to provide an 8-in. extension of the rail head.

THE HEAD was then heated to a cherry red and hammered with a maul to form a hook engaging the longitudinal rail.

would a retaining wall.

Assuming that the driving of the poles is compacting and producing a relatively impervious core wall out of that part of the soil directly beneath the track, it is fully expected that this wall will also act as a dam, restraining the water from passing freely to the river. If this feature is borne out, such dammed-up water will flow laterally along the face of the stabilized portion, subsequently resulting in an extension of the pole-driving area until such time as impervious strata are encountered. This reasoning is supported by the fact that during the driving of the poles, not all of them would land on the same even rock strata or level (see accompanying drawing).

NATIVE TIMBER poles were used in the stabilization operation. They were supplied in lengths of between 18 and 22 ft., tipped with steel driving points.

Maintenance Costs Reduced

During 1951 and 1952, 10 locations between Mile Posts T-92 and T-99, near Whittenberg, Mo., were stabilized in this manner at a total cost of $79,180, or $7.75 per lineal track foot. Prior to the stabilization, it was necessary to patrol and work these sections of track, night and day, for periods of from three to four months at a time during wet weather and high-water river-stage conditions. This work, employing an extra gang and a special section gang along with the regular section forces, was carried out at an expenditure of $55,565. This same territory is now maintained, with only the regular section forces, at an annual saving of $55,550 as compared with the former condition. The work was performed under the direct supervision of W. A. Schubert, division engineer of the River division.

THE TRACK was given an out-of-face surfacing, using a 2-in. raise, after the tie rails had been installed and the open trench backfilled with ballast.

Santa Fe's Speed-Control Signs . . .

Now Reflectorized for Better Visibility

Program involving all of this road's permanent and temporary signs is now nearing completion. Unusual aspects of the undertaking are that the reflectorized materials are being applied to the existing signs and that the work is being done on a mass-production basis in a new shop designed and built especially for this purpose.

• With increased safety as the objective the Atchison, Topeka, and Santa Fe is pushing a program for completely reflectoring the thousands of warning signs along its right of way through 11 states from Chicago to the West and Gulf coasts. All of the line's 4,800 permanent speed control signs have been reflectorized. So have 80 per cent of its temporary "slow" and "resume-speed" signs, as well as numerous yard limit, railroad crossing, railroad junction, full stop, and multiple-track signs.

Having completed its first year in operation, the road's new sign shop at Albuquerque, N. M., established for reflective sign production exclusively, has already turned out more than 9,000 signs—signs that reflect brilliantly in the dark and provide greater safety for night-time operations.

So successful has the program been that the company is testing further uses of reflectorized materials, according to R. W. Mauer, assistant engineer, in the office of the chief engineer system at Chicago, who has planned, developed and coordinated the program from its inception.

Sign reflectorization on the Santa Fe is based on the use of "Scotchlite" reflective sheeting—a material which makes possible over-all reflectorization of each sign. The surface of each of the new signs is completely covered with reflective sheeting, thus making the signs visible at distances at night up to a quarter of a mile or more. When picked up by headlights, the signs are said to reflect brilliantly in true color—up to 220 times as bright as white paint.

Another point behind the decision to undertake the program is the expected service life of the signs. Although a little more than a year's time in actual service has not been sufficient to establish the service life under all conditions encountered, tests conducted since 1949 by the railroad, and for an even longer period by the manufacturer of the reflective sheeting, indicate they will outlast two paint jobs on the wood signs which were previously used. This means a total service life of around six years.

What makes the Santa Fe program particularly interesting is that it makes full use of existing painted signs, adding reflectorization to the old ones rather than replacing them with completely new reflective signs. This factor alone has cut the cost of the program considerably. Moreover, in carrying out its sign program the road is capitalizing on the characteristics of the material that lend themselves to efficient mass production.

Types of Signs Reflectorized

"Reflectorization of speed-control signs—both permanent and temporary—has been the goal of the first large-scale program, now nearly completed," Mauer said. Permanent signs of this type previously consisted of a painted wood surface, 16 in. by 36 in. Moisture and weathering, however, caused the paint surfaces to deteriorate so that they had to be repainted about every 36 months to assure night-time visibility. The temporary signs, on the other hand, were of painted metal 18 in. in diameter. But again the problem was night-time visibility.

As a result, a new method of reflectorizing the wood signs was developed by the Santa Fe in conjunction with the Minnesota Mining & Manufacturing Co., St. Paul, Minn., manufacturer of "Scotchlite" reflective sheeting. Called the metal overlay method, this procedure consists basically of bonding the reflective sheeting to a relatively thin metal blank, then fastening it directly over the surface of the old sign.

Shop Arrangement

For carrying out its sign program the Santa Fe opened a new sign shop at Albuquerque, N.M., in July 1951, which makes reflective signs for the entire system.

OPPOSITE PAGE—Night shot of typical reflectorized speed control sign of metal overlay type as made on Santa Fe. ABOVE—The system sign shop at Albuquerque, N. M. Degreaser unit in background. Castered work tables promote flexibility.

This shop has virtually revolutionized the sign-making operations. Previously three shops were maintained over the system to turn out painted signs.

Both because of the nature of the reflective sheeting used and because of the carefully planned organization of the Albuquerque sign shop, high production of reflectorized signs has been achieved with minimum effort and cost. Only two men—a painter (though only incidental painting is involved) and a helper—are required to operate the sign shop itself, turning out the finished signs once the metal blanks have been prepared.

The use of castered work tables has contributed much to the efficiency of the sign shop, according to D. J. Everett, superintendent of shops at Albuquerque. These tables not only make it possible to move the stacks of metal sign blanks around the shop without carrying them by hand, but they also lend a high degree of flexibility to the shop, since the work space can be quickly and conveniently re-arranged to fit any particular job.

"Safety in the shop has been considered too," Everett said. "The degreasing unit, for example, is specially constructed with a walkway built low enough so that it is virtually impossible to accidentally fall into the tank." Storage of materials is in dust-proof cabinets built along the walls. Light-proof storage for the "Scotchcal" lettering film is provided, since the adhesive is somewhat sun sensitive and exposure to sunlight for an extended period while stored would cause some difficulty. Since cleanliness is essential to the operation, the shop is air conditioned. Slightly pressurized, it was built with tongue-and-groove siding to keep out dust and sand—a problem in the Albuquerque area. Additional space is available adjoining the 30-ft. by 50-ft. sign shop. Storage is provided, as well as a separate paint room and metalworking shop.

In making the permanent "slow" and "resume-speed" signs the metal blanks for the 16-in. by 36-in. overlays are first sheared to size in the metalworking shop from sheets of 36-in. by 128-in. 20- or 22-gauge bonderized steel. The metalworkers also punch eight holes around the edge of each blank for mounting screws. Shearing and punching are used—rather than sawing or drilling—since this method tends to pull the protective zinc coating over the cut edges, providing better protection from rust.

Next the blanks are degreased to remove foreign particles and film on the surface of the metal. An electric hoist lowers the metal blanks on racks into the trichloroethylene solution in a Blakeslee degreaser unit which is capable of degreasing several hundred blanks in a few hours.

Because of the galvanized surface of the metal, a paint coat is unnecessary. Just prior to application of the reflective sheeting, the surface of each blank is wiped down with a tack cloth.

In preparation for applying the sheeting the protective backing is stripped from it and laid aside, but not discarded. The sheeting for each sign—yellow for speed-limit signs—is then positioned on one of the metal blanks and tacked in two places, using A-2 activator to hold it temporarily while the lettering is applied.

"Although the silk screen method has long been used for lettering reflective sheeting signs, the Santa Fe is using a more recent method in its operation," Mauer said. "This involves the use of already cut-out numerals made from 'Scotchcal' film." Supplied by the manufacturer of the sheeting, these are a black, non-reflective plastic film that is gasoline resistant and can be bonded to the sheeting just as the sheeting is bonded to the metal. The pre-cut numerals (series 600) are 10¼ in. high, with a 1¾ in. wide stroke. A white disposable liner covers the face of the plastic film, making the numerals stiffer and easier to handle.

Two sets of numerals go on each speed-limit sign—

1 AFTER DEGREASING, temporary signs are spray painted mineral brown to protect the metal. Here signman is wiping down painted surface prior to application of reflective sheeting.

2 LETTERS are positioned with template as a guide after reflective sheeting has been positioned on the metal blank. Note small horseshoe magnet for holding metal template in place.

3 TEMPLATE used to position letters is shown here. Both letters and reflective sheeting are temporarily tacked in place with activator. Protective liner is later peeled off letters.

one set for passenger train speeds and the other for freights. (Where allowable passenger and freight speeds are the same only one set of numerals is placed.) These are positioned on the yellow reflective background by means of a metal template designed by the Santa Fe. A small permanent magnet holds the template in position on the metal backing while the numerals are applied. Like the sheeting the numerals are tacked in position at two points with A-2 activator.

The template is then removed and the metal blank —complete with the reflective sheeting and the numerals tacked in place—is put into a vacuum applicator for bonding. Nine of the 16-in. by 36-in. permanent sign panels go into the 5-ft. by 12-ft. "bulletin" applicator at a time.

The vacuum applicator—specifically designed for bonding the reflective sheeting to the back-up panels—employs atmospheric pressure on a top and a bottom rubber diaphragm which presses and molds the reflective sheeting to the sign surface. Heat, supplied by steam under pressure, activates the adhesive and firmly bonds the sheeting to the sign surface, and, at the same time, bonds the numerals to the sheeting. Time in the applicator is approximately six minutes.

By using the plastic-film method for applying the numerals stencil cutting is eliminated, and also it is pointed out that even a single sign with any legend can be made economically, whereas the silk screen method is said to be economical only when a number of signs are to be made from one stencil. It is pointed out, in addition, that the lettering film is more durable and consequently will withstand weathering longer than will the silk screen paints.

Generally for every yellow speed-limit sign, a corresponding permanent "resume speed" sign is used. These are the same shape and size, but are made with a green reflective background and bear no legend. The completed permanent "slow" and "resume speed" sign panels are then stacked for shipment. At this time the disposable liner that was stripped off the reflective sheeting and saved, is now placed over the face of each sign and serves as a protective interlayer during shipment.

Temporary Signs

The temporary "slow" and "resume speed" signs reflectorized by the Santa Fe are 18 in. in diameter and of 12-gauge steel. They are mounted on either 4-ft. or 8-ft. steel posts, 2¼ in. in diameter, pointed at one end to facilitate forcing them into the ground. To reflectorize these signs they are brought in from service or from storage. In the shop they are first sandblasted to clean up the surface, and then hand dipped in the degreasing unit. Since the surface is not rust-resistant, the metal panels are given a single spray coat of lacquer-base primer paint in the paint room, before the reflective sheeting is applied. Also, in order to provide a smooth surface on such of these signs that require repair, the rivets that originally held the sign to the mounting post are removed and the sign welded to the post instead.

After the prime coat has thoroughly dried it is wiped down with a tack cloth, then pre-cut discs of reflective sheeting are tacked in place with activator. The remainder of the steps are similar to those for the permanent signs—yellow reflective sheeting with the word "SLOW" in 6-in. letters is used for the temporary slow-speed signs, and green sheeting with no legend for the temporary "resume-speed" signs.

In the bonding operation the entire temporary sign—post and all—is put in the applicator. Twelve of the 4-ft.

signs and eight of the 8-ft. signs can be inserted at once, thereby saving considerable time.

Since it is important to give reasonable protection to the reflective surface of the signs during storage and shipping, the Santa Fe developed inexpensive packing methods that have proven very satisfactory.

Packaging for Shipping

The metal overlay panels for the permanent signs are packed in special corrugated cardboard cartons (275-lb. test) that are stenciled for return to the sign shop. Thus each carton makes three or four round trips, cutting down packaging expense yet providing ample protection. Cartons are taped shut with "Scotch" filament tape No. 880 which provides plenty of strength, yet can be easily cut and trimmed with a knife by the forces in the field.

Because of their shape and the length of the attached post, temporary "slow" and "resume-speed" signs presented a somewhat different problem. These are filament-taped together and wrapped in heavy paper in pairs—a yellow "slow" sign and a green "resume-speed" sign, since where one is needed, the other is also used in conjunction with it.

Since temporary signs are subjected to rough handling in the field the Santa Fe came up with the idea of using empty weed killer sacks—20-in. by 34-in. four-ply, sturdy paper bags that would normally be thrown away—as a means of protecting these signs while not in actual use. "These are currently being tested and promise to provide ideal, low-cost protective covering for the temporary signs while carried on motor cars or stored in tool houses," Mauer said.

Installation in the Field

Each of the cartons contains instructions to the field crews that install the signs. The reflectorized metal overlay panels are fastened directly over the old wood signs using No. 10 cadmium-plated or galvanized wood screws 1¼ in. long. This type screw will not rust and prevents rust "run down" on the face of the sign. Reflectorized signs are erected by the bridge and building forces in a single trip, since only one operation is necessary to convert the painted sign into one that is reflective.

Before the reflectorization program was adopted, extensive tests were conducted to determine the nighttime visibility of the reflective signs as compared with the painted ones.

Since the reflectorizing program at the Santa Fe is a conversion operation rather than one of replacement, the cost of reflective signs versus painted ones has not entered into the picture. Although the use of reflective material is somewhat higher in cost than ordinary paint, other advantages more than offset it, in the opinion of the responsible officers on this road.

When the metal overlay blanks do need replacement, the planned procedure is simply to remove the screws, take the blank back to the sign shop, and apply a new reflective surface to the other side.

An interesting experiment on the durability of the reflective signs was started back in 1949 when a number of low, inter-track speed-control signs were reflectorized by mounting "Scotchlite" sheeting on bare aluminum. "Although the reflectorized signs were subjected to dirt and weathering conditions," states Mauer, "when they were washed off with soap and water, they were found to be virtually as good as new—more than two years later."

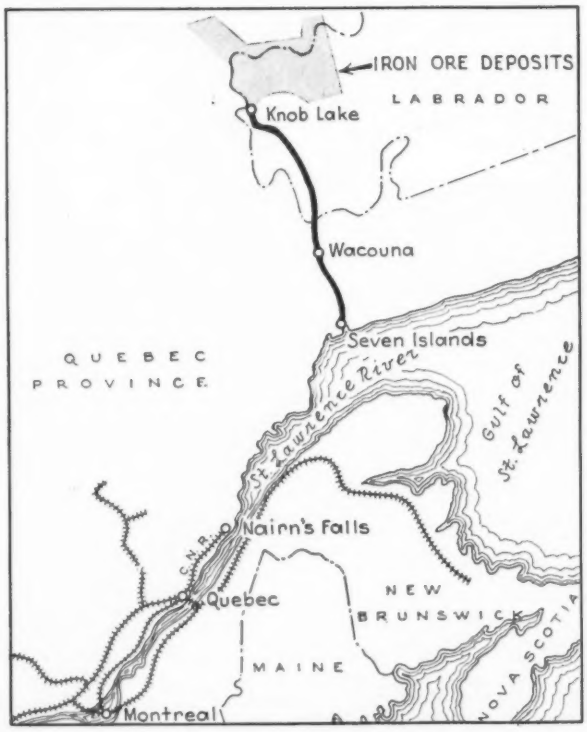
4 TEMPORARY signs are placed in the vacuum applicator—posts and all. Letters are bonded to the reflective sheeting and sheeting is bonded to the metal sign blank simultaneously.

5 COMPLETED temporary signs in foreground. Man at left is removing white liner from letters, revealing black non-reflective surface. Other man is preparing signs for shipment.

THE SPECIAL RAIL CARS are demountable and, when empty, can be lifted off the track by a crane. This feature eliminates the need for running to a siding for switching out the empty car. The cars are reassembled by another crane behind the gang.

Building the Q.N.S. & L...

Rail-Rack Cars Speed Track Laying

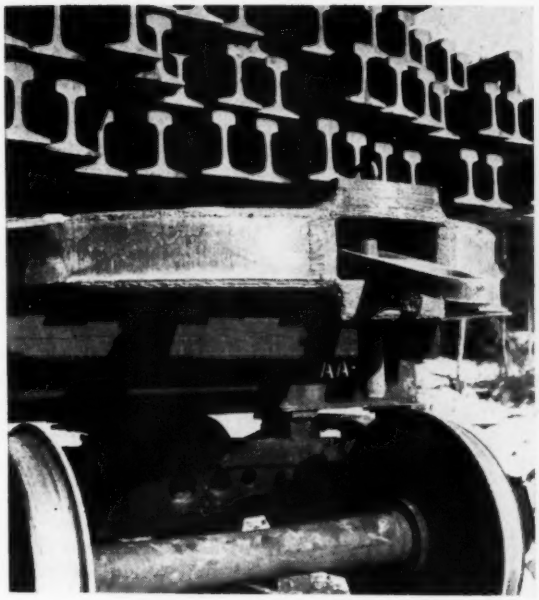


Background of the New Line

● The Quebec, North Shore & Labrador is being built from Seven Islands, a small town in the Canadian Province of Quebec, to Knob Lake in Labrador, for tapping fabulously rich iron ore deposits in northern Quebec and western Labrador. The town of Seven Islands (see map) is at an isolated point on the north shore of the St. Lawrence estuary and is 20 miles from the existing railhead at Nairns Falls on the Canadian National.

In 1939, the Hollinger-North Shore Exploration Company secured licenses from the Provinces of Quebec and Labrador for the exploration and development of the ore fields. When the extensive nature of the ore deposits became evident, the Iron Ore Company of Canada was formed as a holding company for the financial interests of the Hollinger Consolidated Gold Mines, Ltd., the Republic Steel Corporation, the M. A. Hanna Company, the Youngstown Sheet & Tube Co., the Armco Steel Corporation, and the National Steel Company. The Iron Ore Company of Canada will develop the properties and has formed the Q.N.S.&L. as a subsidiary to build the 360-mile line over which the ore will be hauled to tidewater at Seven Islands.

Work was begun on the construction of the new line in 1951. Since the road is scheduled for completion in 1954, and because of limited working seasons due to strong winds, extreme cold, and heavy snowfall, it was necessary that the work progress from intermediate points as well as from Seven Islands. The answer, in the absence of established roads in this rugged wilderness country, was an "air-lift" operation, whereby men, materials and equipment were flown to the end of the proposed line at Knob Lake and to an intermediate point at Wacouna near Mile Post 97. Construction work on the clearing, grading and the building of bridges and other waterway openings, has proceeded from these points.



ABOVE—At the time the new rail is laid, it is not spiked but is held at gage distance by the special rods, one of which is shown here. The rail crane can then advance to lay other rails. After the work train has passed, the gang inserts the other ties and the tie plates, then spikes the rails in place. LEFT—Special rack cars were built from standard freight-car trucks and lengths of 142-lb. rails. A link-and-pin arrangement was devised for coupling the cars together. Each car will carry a full load of 70—132-lb. RE rails, 39 ft. long.

Having to build 360 miles of main track railroad and 20 passing tracks each one mile long in two working seasons of 19 weeks each, calls for careful planning and ingenuity. To speed track laying on the Quebec, North Shore & Labrador demountable rail-rack cars are being used along with easily applied rods for holding the rails to gage until they can be spiked behind the rail train.

• Although a yard had been built at Seven Islands, Que., and a few miles of main track had been laid northward from that point by the end of the year 1951, the Quebec, North Shore & Labrador was still faced at the beginning of 1952 with the staggering task of laying and ballasting almost all of the track required for this 360-mile line, with mile-long passing tracks spaced every 20 miles, during the years 1952 and 1953. One reason why this task is so formidable is the shortness of the working season, as frost is not out of the ground much before June 15 and winter can be expected to start before November 1.

The problem was increased by the difficulty of material supply, as there are no access roads or railroads for moving track materials up to the head end of the stub-end track-laying operation except over the track as it is built. An extensive study of requirements for completing the construction of the railroad in 1953 indicated that it was necessary to set up a track-laying schedule of 1½ miles a day, with an average of not less than 30 miles of main track per month in addition to the passing and other tracks.

Conventional methods used in laying new track by other railroads were reviewed and studies were made of the manner in which these methods could be adapted for use in an isolated location without roads or railroads for material transport. Plans for the use of rail-laying machines, of prefabricated track panels, and other methods were studied and discarded. The plan finally adopted is a combination of both conventional and new methods and involves holding the rails at gage by easily applied gage rods, while the rail crane advances over them, and the use of specially built rail-rack cars.

The gage rods have hooked ends, which are looped up around the bases on the field sides of the rails for keeping them from spreading. On the gage sides of the rails, the rods have swinging stops which are positioned parallel with the rail when the rods are being placed, then turned at right angles to engage the rail bases for holding the rails at approximate gage.

For making the rail-rack cars, a number of standard four-wheel freight-car trucks were obtained. On each of these a heavy timber was mounted over the center bolster. Structural-steel uprights were fastened at the ends of these timbers to serve as car stakes. Car-frame bodies, actually consisting of open-frame racks, were each built of three 142-lb. rails, placed longitudinally, two over the wheels and one along the center of the track. These rails were cross braced at their centers and tied together at their ends. To make a rail-rack car one of the frames was set on two of the car trucks and crossties were bolted onto the underside of the frame on each side of the heavy timbers of the trucks, thus keying the frame and the trucks together yet permitting the rack to be lifted from the trucks.

A special link-and-pin coupler was devised for coupling the cars together into a train and a similar device was installed at the rear end of the Burro crane which was used for handling and laying the rails.

The special rack, being considerably lighter than a conventional car body, permits the loading of 70—39-ft. rails. This loading is said to be 10 more rails than would be permitted on conventional flat cars, and resulted in the elimination of the handling of one car in each day's rail-laying operations.

Material Brought Up at Night

The rail being laid is 132-lb. RE section supplied by the Dominion Iron & Steel Co., Sidney, N.S., and is shipped by boat to Seven Islands, where it is unloaded and stock

HALF OF THE CROSSTIES are distributed ahead of the track laying with Dumptor trucks. A small gang of the day force spaces and lines the ties.

piled. The track fastenings and the creosoted hardwood ties, mostly from Texas, are also shipped in by boat. Enough rail and crossties for each day's track-laying operations are loaded from the stock piles onto flat cars and are brought up each night to the siding nearest the rail head. Six-hole joint bars are attached loosely to the front ends of each rail by three bolts at the time that the rails are loaded from the stock pile. During the night, the rail is transferred at the siding from the flat cars to from six to eight of the special rail-rack cars by a crane, then brought up to the rail head the next day.

Crossties are handled a little differently. During the night, sufficient ties for tieing half of the following day's track-laying schedule are transferred by a crane from the flat cars to Dumptor trucks which haul them out and distribute them in advance of the rail head. When conditions permit, the ties are dumped along the center of the grade and are spaced during the night. However, since the railway grade must also be used as a road until the track is laid, it is usually necessary to dump the ties in piles at regular intervals along the edge of the grade.

To insure that the roadbed is in the best possible condition for receiving the ties, a bulldozer and a road grader are worked at night smoothing the grade. The gage rods are also hauled out by the Dumptor trucks at night and are distributed on the railway grade at about their approximate use location. The night crew consists of about 20 laborers, 3 truck drivers, and operators for the bulldozer and the road grader.

Constructing the Track

The track-laying work follows a regular procedure. Each morning, a work train, consisting (from the head end to the rear) of the Burro crane, six to eight loaded rail-rack cars, a passenger car, two or more cars with sufficient ties for completing the tieing of the track, a car carrying tie plates, bolts and spikes, and a diesel locomotive, moves up toward the north end of the track. Working just ahead of the rail crane is a small gang of 16 men which finish-smooths the grade and spaces and lines the ties that were distributed the night before.

The self-propelled crane and one car of rail are detached from the work train and move up to the end of the rails. The crane boom is then swung over the car of rails and a man fastens the rail tongs to a rail. The rail is swung 180 deg. and is heeled in by spreading the loosely fitting joint bars of the last laid rail on the same side. A man applies one lightly tightened bolt to hold the new rails, while other men line the newly laid rail on the ties and apply two of the gage rods. The crane then moves forward and these operations are repeated for the opposite rail. Thus, four gage rods are applied per panel. The rails are not spiked at this time; the four gage rods per rail are sufficient for holding the rails at gage while the crane and its car of rails, as well as the remainder of the work train, move over them. In addition to the man employed on the rail car as a hooker, six men are required for heeling in the rail, inserting the bolt, applying the gage rods, and lining the rail into position.

As soon as all the rail on a car has been unloaded, the crane lifts the rack from the car trucks, sets it down along the right of way, and

SPECIAL GAGE RODS were also distributed ahead of the track-laying work. The rods are placed at the rate of four to each length of rail.

removes the two trucks from the track. It is then coupled to another car of rail and resumes laying rail. A second locomotive crane, following behind the work train and the track-laying gang, reassembles the trucks and the racks on the track. The cars are then returned to the camp siding where they are again loaded with rails transferred from flat cars by the same crane.

As the work-train moves up behind the crane, the remaining ties are unloaded from the supply cars and the tie plates, bolts, spikes and other fastenings are distributed. About six men are stationed on the supply train and one man on the ground to make sure that the right amount of material is unloaded.

Immediately behind the work train is a small crew of four men inserting the two remaining bolts at each joint and using two power wrenches to tighten the bolts. Behind this group is a larger crew which inserts the remaining ties and then spaces all the ties. This crew is assisted by a power jack. Working with this unit, and assisted by another power jack, is a group of trackmen inserting tie plates.

The spikers come next. Using a light compressor and air hammers, the rail is partially spiked in place. Four ties per rail are hand-spiked by the gagers. These spikers are followed by spike setters and another crew which completes the spiking of the rails with air hammers. Air for the hammers is supplied by an on-track 365-c.f.m. compressor having an arm, extending ahead about 6 ft. above the rails, on which is mounted an air manifold with six hose connections. All joints are hand spiked.

Including the train crews, four foremen and the laborers, there is a total of about 125 men used in the daylight operations and 25 men for the tie-distributing night operation. These figures do not include the men doing the loading at Seven Islands or the train crew required for moving the materials up to the siding nearest to the rail head.

WITH A PAIR of joint bars hung at one end with three loosely tightened bolts, the rail is heeled in and fastened to the track rail with one bolt.

The crews are housed in boarding cars set out at the nearest passing track to the end of the line. They are transported to and from the job in a passenger coach. An improvised dining car is sent out at noon to the rail head for serving hot meals to the men.

The use of the special rail-rack cars is a distinct advantage to the track-laying work as it eliminates the necessity of running to a passing track for switching out empty cars or of building temporary construction tracks for handling the switching. Also, there is always a car of rail immediately behind the crane. In laying 80 miles of track by this method, it has proved practical for meeting schedule requirements and has produced more track than can be surfaced in a day by the ballast gang which follows behind.

In laying track to date, several daily records of about 8,000 ft. of track have been made. The maximum weekly production to date has been about 8.2 miles of track in a seven-day week. It is expected that much better production can be had when more completed grade is available ahead of the gangs.

The average time required for unloading and laying one car of 70 rails is about 55 to 65 min., and six cars of rail (about 1.8 miles) can be unloaded and laid in 8 hr. From 6 to 9 min., on an average, are required for setting an empty car off the track. It is said that enough track has already been laid to demonstrate the possibility of laying 10 miles of track a week.

THE RAIL-LAYING CRANE in action, with the long boom swinging a 132-lb., 39-ft. rail, 180 deg. from the rail rack car for placement on the distributed ties.

Much Work Done at A. R. E. A. Meeting

Association holds its fifty-second annual convention at Chicago. In addition to the usual reports of standing committees, action was taken on recommendations affecting 50 Manual documents

Convention Pictures

One of the advantages of attendance at the A.R.E.A. convention is the opportunity it affords for renewing old acquaintances, making new ones and "talking shop." The candid pictures shown on these and the following pages are ample evidence that this opportunity is not neglected.

C. J. Geyer, president of the A.R.E.A.

● With 1253 members and 542 guests in attendance, a total of 1845 persons, the American Railway Engineering Association held its fifty-second annual convention at the Palmer House, Chicago, on March 17-19. An unusual feature of the convention proceedings this year is the fact that the members present were called upon to act on recommendations of the association's standing committees regarding revisions or other changes affecting about 500 of the documents comprising the association's Manual of Recommended Practice.

Although much of the time and energy of the association's 22 standing committees and its one special committee during the past year were devoted to the work involved in revising the Manual, they still had time to make the necessary investigations to report on many of their regular assignments. With all these reports to be presented and with 16 addresses to be heard in connection with them, the presentations at the meeting were necessarily of a rapid-fire character.

The fact that the A.R.E.A. is continuing to grapple with the engineering problems of the railroads with undiminished vigor is not only evident in the reports of the standing committees, and the addresses that were sandwiched in between them, but was brought out clearly in the reports of President C. J. Geyer, vice-president (construction-maintenance of way) of the Chesa-

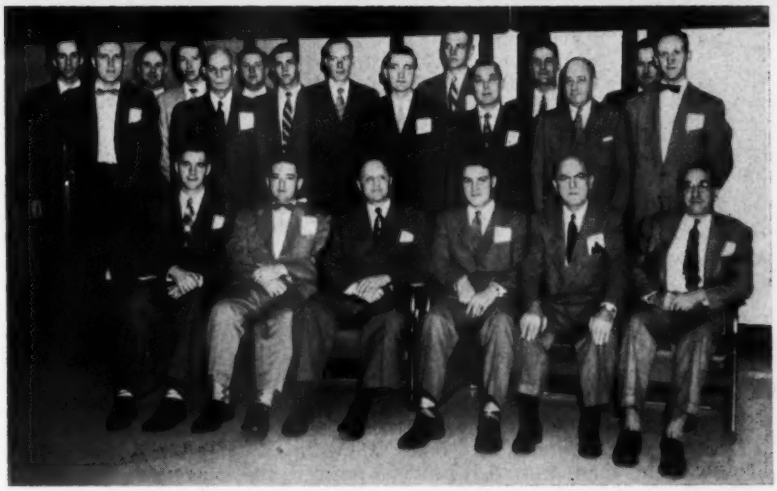
W. B. Blix, Nordberg Manufacturing Company; C. I. Hartsell and T. F. Burris of the C&O; F. N. Beighley, Frisco.

F. W. Holstein and L. T. Burwell of the Rails Company; and F. G. Campbell of the Elgin, Joliet & Eastern.

In the Grand Ballroom of the Palmer House during the opening session on March 17.

peake & Ohio, Secretary N. D. Howard, and Treasurer, A. B. Hillman, chief engineer of the Chicago & Western Indiana.

Reporting briefly on the welfare of the association. Mr. Geyer said that "it is physically and financially sound," and that it has shown "its usual progress during the past year." He then went on to show how this progress is dependent on the activities of the committees and the individual members. The making of an assignment to a committee, he said, "is the start of a report that may mean much or little to railroad engineering knowledge. It all depends on the committee workers." Noting that the committees are composed of railroad officers from presidents down to the youngest subordinates, and that they include representatives of allied industry, colleges and private engi-



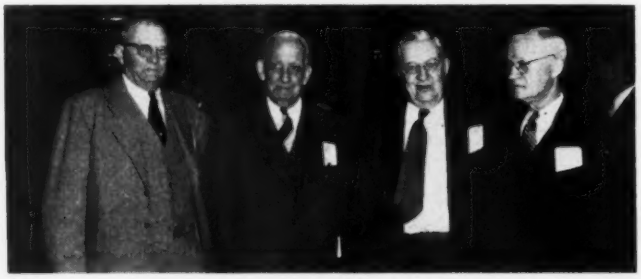
AMONG the Pennsylvania's representatives was this selected group of junior members shown here with several of the road's top engineering officers. Seated, from left to right: J. F. Youngstrom; K. E. Smith; L. E. Gingerich, ch. engr. m. of w., Central region; G. E. Hartsoe; S. R. Hursh, asst. ch. engr.—maint.; D. E. Rudisill, ch. engr. m. of w., Western region. Standing, left to right: H. L. Chamberlain; W. D. Strieff; J. S. Fluke; C. R. Spence; J. L. Gressitt, ch. engr.; H. I. Payne; R. P. Howell; H. E. Simmons; C. L. Tracy; P. S. Cashman; F. R. Call; W. A. Kusnerek; E. R. Shultz, ch. engr. m. of w., Eastern region; J. W. Fuller; A. V. Levergood, Jr.

H. R. Peterson, Northern Pacific; J. P. Bowers, O. F. Jordan Company.

R. R. Crosby, Kansas City Southern; G. L. Staley, Missouri-Kansas-Texas.

R. M. Jenner, Railway Maintenance Corp.; J. S. Parsons, Erie.

G. V. Guerin, Great Northern; H. J. Seyton, Great Northern; R. R. Manion, also of the Great Northern.



R. L. Groover, ACL; C. E. McCarty, RF&P; G. H. Riddle, Bethlehem Steel Company; J. C. DeJarnette, Jr., RF&P.

B. H. Crosland, Frisco; L. V. Johnson, Soo Line; R. J. Moe, Woolery Machine Co.

F. W. Biltz, Reading; N. D. Howard, secretary, A.R.E.A.

F. H. Taylor and J. H. Morgan, both of the Florida East Coast; J. M. Salmon, Jr., Clinchfield.

R. P. Dockery, R. C. Larkin Company; T. H. Taylor, Pennsylvania; S. E. Tracy, CB&Q.

E. T. Cross, Armco Drainage & Metal Products, Inc.; K. L. Miner, NYC; J. R. Hursh, Armco; J. L. Beckel, NYC.

neering firms, Mr. Geyer raised this question: "Can you conceive of a group better qualified to handle a railroad problem particularly with a free rein to each member?" It is his opinion that the A.R.E.A., under this system, "has in the past and will in the future develop the finest standards, methods and practices that can be devised for railroad purposes in the engineering field."

Reporting on the general health of the association, as reflected in the trend of membership and in the character and scope of its activities, Secretary Howard said "membership in all categories has again increased; the total personnel serving on committees has still further enlarged; research efforts have been further broadened and expanded; and the work of committees, as measured by the number of printed pages of reports in the bulletins, and especially by the amount of Manual material offered for adoption, reapproval, or revision, has been unusually intensive and productive; and receipts have again exceeded disbursements."

Mr. Hillman, reporting as treasurer, said that receipts of the association during the past year, totaling $77,514, showed an excess over disbursements of $550.

A general review of developments in research being carried out under the sponsorship of A.R.E.A.

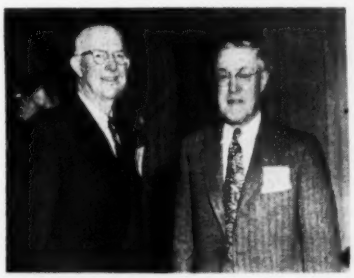
H. J. Kay, Canadian National; W. K. Hooper, Sperry Rail Service; H. J. Fast, CNR.

L. W. Ross, C&O; J. B. Akers, Jr., Cullen-Friestedt; J. E. Wiggins, Sou.

R. J. Pierce, Erie; A. B. Fowler, Erie; J. C. Simmons, Rust-Oleum.

M. J. Hassan, Weir Kilby Corporation; R. G. Detmer, Taylor-Wharton Iron & Steel Co.; C. G. Grove, Pennsylvania.

R. J. Gammie, T&P; H. E. Kirby, C&O; E. C. Vandenburgh (retired), C&NW; L. T. Nuckols, C&O.



From the Illinois Central—J. E. Fanning and F. A. Reed.

J. H. Shieber, MP; Harry Posner (retired), NYC; A. N. Laird, Grand Trunk Western; E. J. Ruble, A.A.R.

S. H. Knight, Northern Pacific; R. K. Johnson, C&O.

I. C. Brown, St. Louis-San Francisco; L. M. Harsha and E. L. Anderson—also of the Frisco.

G. A. Wolf, Baltimore & Ohio; Henry Seitz, W. A. Buckmaster, and Milton Jarrell—also of the B&O.

committees was presented by G. M. Magee, director of engineering research of the Engineering Division, A.A.R. Mr. Magee described tests designed to determine the possibility of increasing the standard rail length from 39 ft. to 78 ft. "There are many problems," he said, "to be confronted in mill production, principally in connection with cooling and finishing the rail." He also told about attempts being made to overcome shelly rail through tests on photoelastic models; of the use of Sonntag fatigue testing machines in a study of the development of bolt-hole cracks; of tests of tie plates and holddown fastenings, using rolling-load machines; and of two new manganese crossings being tested in service.

All sessions of the convention were presided over by President C. J. Geyer, assisted by Secretary N. D. Howard and Vice-President C. G. Grove, chief engineer, Western region, Pennsylvania, Chicago.

The following officers for the ensuing year were elected: President, Mr. Grove; and vice-president to serve for two years, G. M. O'Rourke, assistant engineer maintenance of way, Illinois Central, Chicago.

The directors named are E. S. Birkenwald, engineer bridges, Southern, Cincinnati, Ohio; F. G. Campbell, chief engineer, Elgin, Joliet & Eastern, Joliet, Ill.; B. R.

R. F. Wood, Reading; W. H. Eckenbrine and C. L. Wenkenbach—also of the Reading.

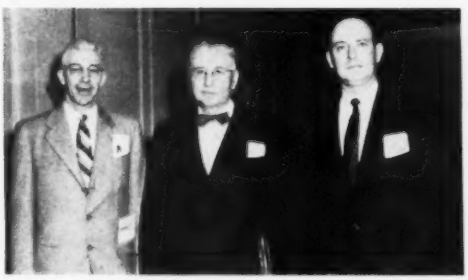
P. J. Schmitz, Frisco; W. C. Pinschmidt, C&O; J. I. Farrell, Johns-Manville.

W. C. Howe, Bessemer & Lake Erie; C. H. Newlin, Southern.

A. W. McKaig, Fabreeka Products Company; H. M. McFarlane, Cullen-Friestedt Company; J. B. Akers, Southern; M. S. Hudson, Taylor-Colquitt Company; T. A. Blair, Santa Fe.

G. B. Campbell, MP; A. B. Chaney, MP; J. M. Giles, Caterpillar Tractor Company; W. F. Dunn, Sr., Southern.

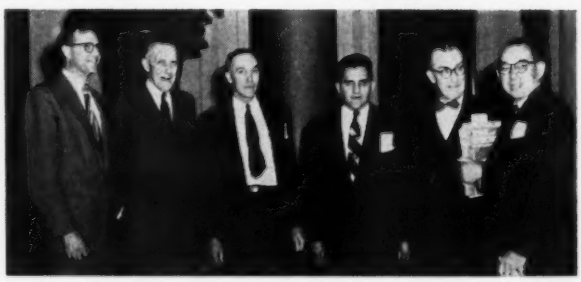
Allen Hagen and H. B. Christianson of the Milwaukee Road.



J. P. Morrissey, Erie; G. M. O'Rourke, Illinois Central; J. A. Ferguson, Matisa Equipment Corp.

R. H. Gilkey, Central of Georgia; H. W. Kellogg, C&O.

J. N. Todd, Southern; S. Shumate, Richmond, Fredericksburg & Potomac; L. B. Cann, Jr., and W. H. Shoemaker—also of the RF&P.



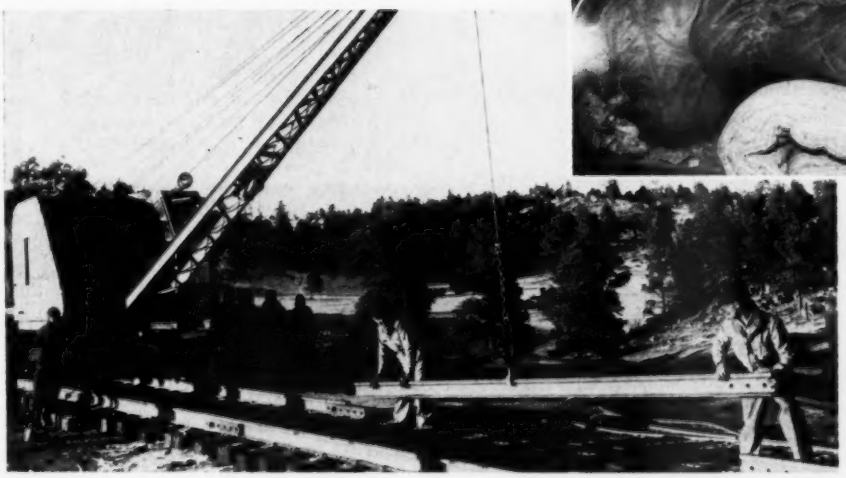
G. A. Godley, Armco Drainage & Metal Products; A. H. Whisler, C. R. Montgomery, S. G. Wintoniak and J. E. K. Krylow—all of the Pennsylvania; R. G. Angell, A. W. Byers Company.

Meyers, chief engineer, Chicago & North Western, Chicago; and G. E. Robinson, engineer structures, New York Central, Chicago. Members of the Nominating Committee are L. T. Nuckols, chief engineer, Chesapeake & Ohio, Richmond, Va.; C. H. Sandberg, assistant bridge engineer, Atchison, Topeka & Santa Fe System, Chicago; E. L. Anderson, chief engineer St. Louis-San Francisco, Springfield, Mo.; W. H. Giles, assistant chief engineer system—construction, Missouri Pacific, St. Louis, Mo.; and L. H. Laffoley, engineer of buildings, Canadian Pacific, Montreal, Que.

In addition, G. W. Miller, engineer maintenance of way, Eastern region, Canadian Pacific, Toronto, Ont., and vice-president of the association, was automatically advanced to senior vice-president succeeding Mr. Grove.

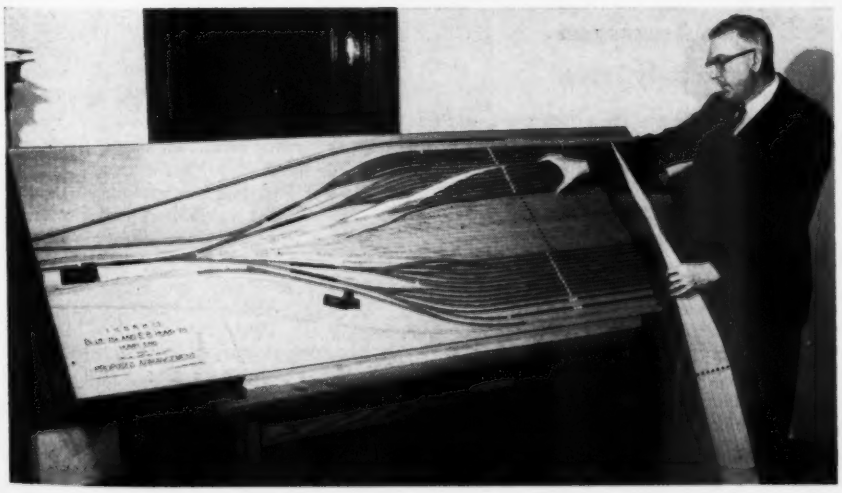
On two occasions during the three-day meeting, the program departed momentarily from a consideration of purely engineering activities. One of these occasions was an address at the opening session by James H. Aydelott, vice-president, Operations and Maintenance department, Association of American Railroads, whose subject was "Planning Is Always in Season." The other was the annual luncheon at which the guest speaker was Dr. Francis Gaines, president of Washington and Lee University.

News Briefs in Pictures...



TRACK-WORK scenes on the Union Pacific's 42-mile line change in Wyoming, now nearing completion. Above—L. B. Corbett, ballast gang foreman, believes in being comfortable as he sights for a track raise. Left—The last rail is guided into place by P. T. Chriswell, roadmaster (left), and Cleo J. Birch, steel gang foreman. The project is being carried out at a total cost of $16,000,000. The purpose of the project is to reduce the grade for westbound traffic over famed Sherman Hill.

RIGHT—Crossties in the making for the Northern Pacific. The scene is near Guttenberg, Iowa, and the logs being loaded are oak. The unit in the foreground is an International TD-9 crawler tractor and fork loader and it is owned by the Pierce Lumber Company of Guttenberg. While the machine is used primarily for loading logs on trucks, it is also employed in building about 20 miles of logging roads each year. The hardwood tract in which picture was taken produces more than 2,000,000 f. b. m. of lumber annually.



LEFT—As an aid in carrying out the track work involved in modernizing the Blue Island (Chicago) yard of the Indiana Harbor Belt this model has been constructed. Among other changes, the yard arrangement is being converted from the ladder type to the group type. In the model individual pieces representing the old track arrangement may be removed and replaced with pieces of the same shape showing the new layout. In the picture the manner of using the model is being demonstrated by F. A. Hess, assistant chief engineer of the New York Central, which controls the I. H. B.

WHAT'S THE ANSWER? . . .

. . . a forum on track, bridge, building and water service problems

Maintenance of Turntable Centers

How often should turntable center blocks and bearings be inspected and lubricated. What details should an inspection cover? How can this be done best? Explain.

Grease, Don't Oil, Bearings

By B. M. Murdock

Engineer of Buildings, Illinois Central, Chicago

The turntables on our railroad are all equipped with conical roller bearings in the center, and the great majority of them are provided with live rings with roller bolts to keep the conical rollers in alinement. It has been our practice to lubricate these center bearings with a light grease that will not harden during extremely cold weather or become fluid in warm weather. No oil of any kind is used in the turntable center for, should a drainage system fail, water will rise in the turntable pit and float the oil out of the center, whereas a light grease is not affected in this manner. It is our practice to change the lubricant in the turntable center at least once every year, usually by raising the table with a wreck derrick. We have found that this practice works satisfactorily.

The majority of our turntables are also equipped with roller bearings on the end truck wheels and the same kind of grease is used in these bearings as is used in the center. However, it is the practice to lubricate (not change) the roller bearings at least once every two weeks. This practice has also proved satisfactory.

The machinery on the turntable tractor is equipped with grease cups and our instructions to the operators are that every grease cup be given one turn every day. If this practice is followed, no difficulty is experienced.

At our major terminals it is the practice of the maintenance-of-way department to make weekly inspections of the machinery and the structure and make whatever adjustments or repairs are necessary. At smaller terminals where the turntable does not get such heavy duty, local forces make periodical inspections and any repair work found necessary is reported to our maintenance-of-way department, which takes care of it at an early date. These arrangements have worked out satisfactorily in both cases.

Inspect Every Six Months

By W. C. Harmon

Supervisor, Bridges & Buildings, Southern Pacific, San Francisco, Cal.

The center block and bearing of a turntable should be inspected at the same time that the other parts of the table are inspected. An overall inspection should be made each six months and it is always well to make superficial inspections whenever in the vicinity.

When the foundation is properly and substantially built, the possibility of failure is quite remote. Unusual occurrences, such as the flooding of the pit or a collision caused by an engine running into the pit, will make an immediate inspection of the foundation block and bearing necessary.

The flooding may cause settlement but shock from an engine could cause fractures at the anchor bolts or even shear them off, moving the table off center. The center block should be examined carefully around the anchor bolts for cracks in the block. An examination around the base of the center bearing should show whether it has been displaced. Tapping the bolts with a hammer will give an indication whether any of them are broken or loose. Settlement of the table foundation can be detected by turning the table through the quadrants of the circle and checking the elevation of the table rails against the approach rails.

Once a turntable pit becomes flooded above the center bearing, the table should be jacked up and the rollers inspected to see if the

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Answers to the following questions are solicited from readers. They should be addressed to the Whats' the Answer editor, Railway Track and Structures, 79 W. Monroe St., Chicago 3, and reach him at least five (5) weeks in advance of the publication date (the first of the month) of the issue in which they are to appear. An honorarium will be given for each published answer on the basis of its substance and length. Answers will appear with or without the name and title of the author, as may be requested. The editor will also welcome any questions which you may wish to have discussed.

To Be Answered In the July Issue

1. What are the advantages and disadvantages of the "exploded view" type of parts lists for maintenance-of-way machines? Explain. Is it more practicable for the shop or for the field mechanic? Why?

2. What major factors determine whether a pneumatic-tube system should be installed at a yard? Explain. What sizes and shapes of tubes are preferable for use at most yards? Why?

3. What measures can be taken to minimize the damage to "bent" stock rails caused by wheel treads? What are their relative advantages and disadvantages? Explain.

4. In view of the increasing use of 250-ton wrecking cranes, is it necessary to restrict their speeds when passing over branch-line trestles having 12-ft. to 15-ft. panels with 3-ply or 4-ply chords? Why? What maximum speed is considered safe under such circumstances? How is this speed determined?

5. What is the relative importance of the ballast at the ends of ties in resisting the lateral movement of the track? To what extent does the type of ballast have a bearing on this question? Explain.

6. What are chemical-resistant vinyl finishes? For what uses are they adaptable in connection with water, oil, and sanitation services on railways? How can they best be applied in such cases? Explain.

oil might have been floated out or silt floated into the case.

When making an inspection of the center roller bearings they should be uncovered, the rollers washed off and carefully examined to see if any of the cone bolts are broken or badly worn. The retainer band may be badly worn where the cones thrust against it. A worn band allows the cones to shift outward and eventually breaks. The top and bottom races of the roller nest may be flaked off or chipped making the faces rough or irregular.

In any of these cases repairs should be made promptly to avoid a tie-up of this important facility. The most practical way to prevent a tie-up is to have a complete new assembly ready to replace the old one.

Raise Table for Inspections

By George S. Crites

Division Engineer (Retired) Baltimore & Ohio, Baltimore, Md.

Other than for very heavy duty or for much over-stressed turntables, once a year will prove often enough to give them a general inspection as to the condition of center blocks, bearings and for lubrication. Where snow and freezing conditions prevail, this inspection can best be made in the late autumn. In other locations, it may be done as traffic conditions permit.

After a thorough, joint appraisal of the table by the mechanical, electrical and maintenance forces, arrangements are made with the transportation department to take the table out of service for the length of time necessary. To prepare the table for inspection, suitable air lifting jacks, if available, may be used for raising the table off its bearings. Otherwise, a suitable locomotive crane may be used for this purpose.

The electrical-department forces inspect and repair the transmission lines and the motors, the mechanical-department men handle the tractors, and the M/W forces take care of the table proper and its bearings.

Where there are several tables of the same kind on the railroad and the table to be repaired cannot be taken out of service for long without much inconvenience and expense, it pays to have on the ground replacements for all center blocks and bearings which might take some time to overhaul and lubricate. This also applies to tractors and electrical equipment.

In most places it will be found only necessary and expedient to lift the table off its bearings, dismantle and wash the bearings in distillate, renew a few bolts or pins, clean out all oil ducts and apply new lubricants. It may also be found that some of the adjustment shims are not exactly right and need fixing or replacing.

Raise Tables Once a Year

By M. J. Harp

Bridge & Building Supervisor, Missouri Pacific, Poplar Bluff, Mo.

Turntables should be raised at least once each year, so that the centers can be opened up and cleaned, and the rollers and raceways examined for evidence of pitting, cutting or crushing. Where rollers are nested in live rings, loose stud bolts should be adjusted, and all parts examined for cracks, worn threads and excessive wear.

The table can be raised either by a wreck derrick or by jacks. In using a wrecker, block up one end of the table, hook the derrick cable on the other end and lift the table the required distance, then block it up so there will be no chance of its falling on the men who must get under the table. If a wreck derrick is not available, a very good way to raise a turntable is by the use of four 75-ton jacks. In this method, keep the table level and in line by running all four jacks up together. As in the other method, the turntable should be blocked up as it is raised thereby eliminating any chance of its falling if a jack should kick out or not hold the load.

After the table has been raised the required distance and is well blocked, the bottom casting of the turntable center should be taken out so that all grease can be cleaned off of the rollers and studs and it can be inspected carefully, especially for cutting of rollers or any broken studs. If this inspection reveals no appreciable wear, the grease should be renewed, the top casting cleaned off and the top race put in good condition.

When the table is being let down after having been cleaned and lubricated, some one should be assigned to watch the center very closely to see that the table is kept level as it is being lowered and that it is in line with the bottom casting so that it will line up when completely seated.

In addition to the annual inspection, tables should be inspected once each month. During this monthly inspection, examine end trucks to see that there is no distortion, no loose bolts or rivets and no cracked or broken parts. Also look for wheels that are loose on axles, that are out of line or have worn treads. Watch for bent or broken axles, worn boxes, loose bolts and for correct adjustment of shims under the boxes. Carefully check the clearance between wheels and circle rail and, finally, look over the girders, bracing and cross frames for buckling, for loose rivets, and possibly cracked sections.

Neglect Invites Damage

By H. O. Burkland

Turntable Inspector, Chicago, Burlington & Quincy, Chicago

The importance of regular inspections of turntable center bearings, especially those located at main terminals, has long been recognized by the supervisory officers in the engineering, operating and mechanical departments of the major railroads. Neglect of a turntable center bearing will invite costly damage and possible failure. A center bearing failure will result in tying up the turntable so that no engine can be handled in or out of the enginehouse and thus will delay all trains until the center bearing can be repaired or replaced.

The working parts of a roller or disc-type center bearing are enclosed in a housing so that they are inaccessible and hidden from view. When the table is turning a heavy engine, a tremendous force is imposed on the center bearing which tends to force out the oil or grease, so that regular oiling with a proper lubricant is necessary and all oil holes and grooves must be kept open.

At the present time most turntable center bearings at main terminals are of the disc type and in general consist of a phosphor-bronze disc (80 per cent copper) which sits between an upper and lower disc of forged steel. The three discs are set in a solid bowl casting or are surrounded by two half-confining rings. Unless the surfaces of the discs are kept smooth, polished, well lubricated, and free from water and other particles, the bronze disc will commence to flake or roughen up and complete failure will occur in a very short time thereafter. The regular inspection

of center bearings will often reveal rough discs, lack of oil, loose foundation bolts, and other conditions which can be corrected before complete failure occurs.

While it is generally agreed by most railroads that a regular center bearing inspection is necessary, there are different opinions as to how frequently this should be done. On the Burlington railroad it has been found that center-bearing inspections, which years ago were necessary four times each year, and which were later reduced to twice each year, can be safely reduced to one inspection annually. This reduction was made possible by improved designs of center bearings, tests to improve lubrication, experiments with alloys and other metals, and by continuing instructions to the personnel responsible for the maintenance of the turntables.

The complete annual inspections are made by a representative of the bridge engineer who is allowed almost full time to carry out his various duties. He makes the inspections, recommends the repair work to be done, sends out inspection reports to the various officers, has access to all turntable records, and is authorized to order repair parts. He is also required to keep on file, in the bridge engineer's office, a complete list of spare parts for emergency repairs.

A schedule showing inspection dates is prepared by the inspector and sent to the division superintendents. Each superintendent then arranges to have the master carpenter, a bridge foreman and a gang on the ground on the date specified, with jacks, wrenches, waste, oil, and such other tools as may be necessary. The turntable span is then raised by means of bridge jacks and carefully blocked up for safety. The center-bearing parts are then removed, cleaned and examined, after which they are put back in place, together with lubricating oil or grease. The table span is then lowered and again placed in operation. While the table is being raised and lowered the inspector examines the steel, timber deck, the tractor, circle wall, circle rail, and other items.

After notes which are made at such inspections have been forwarded to the division officers, the repairs recommended are made by the bridge, track and mechanical forces under the direction of the bridge engineer.

How to Minimize Cutting of Sand Pipes

What methods, if any, can be employed to prevent or minimize the cutting of sand pipes at locomotive servicing stations when compressed air is employed to elevate the sand? Explain.

Use Wyes, Not Bends

By Engineer of Structures

We have found no satisfactory new answer to the old sand-piping problem. Because of that, we have continued to use steel pipe connected by cast-iron Y-branch fittings at changes in direction. One leg of the wye is plugged so that it fills with sand and acts as a cushion for the moving sand. In that way abrasion is reduced to the minimum.

Problem Needs More Study

By James J. Healy

Supervisor, Bridges & Buildings, Boston & Maine, Boston, Mass.

There are two problems present when locomotive sand is elevated or transmitted horizontally through pipe lines from dryers to storage bins by compressed air. These are: (1) Costly maintenance of the pipe and fittings; and (2) reduction in size of particles resulting in a high percentage of fines in the material.

The maintenance cost of the pipe line and fittings depends upon the amount of use and the type of pipe installed. In one large engine terminal where steam and diesel locomotives are dispatched frequently throughout a 24-hr. period, sand is elevated and transmitted through 3-in. pipe lines at 90-lb. pressure continuously for an average of half of each 8-hr. period. Extra-heavy steel and wrought-iron pipe have been used at various times but neither type has made an appreciable difference in renewal expense because of the abrasive action of the sand under air pressure.

The serviceable period of both materials averages about the same and varies from four months for sections at the beginning of the line to 10 months at the end of the pipe line, which is approximately 500 ft. long.

For test purposes a section of steel pipe with a soft-rubber lining was installed during the past year in the line adjacent to a new section of 3-in., extra-heavy steel pipe. About a month after its installation, particles of the rubber lining were found in the distribution lines and in the valves. The rubber-lined pipe failed before the extra-heavy steel section and the material cost of this pipe was five times greater than the extra-heavy steel pipe.

Inquiries into the possible use of silicon or Crystolon tubes for this purpose have been made with refractory manufacturers. However, because of the length of these tubes, which are supplied in 60-in. lengths with a 4-in. bore, and the lack of positive abrasion-resistance tests of them in actual service, nothing further has been done.

There are conveyor systems on the market which handle fine powders such as soda ash, fly ash, and cement, which should be considered as replacements for pipe distribution systems using compressed air, not only to reduce costly maintenance but also to retain the proper grade of sand required for locomotive use.

Gravity distribution lines from storage bins to the locomotives become plugged, especially during damp and wet weather, because of an excessive amount of fines mixed with clay or silt in the material which, although acceptable according to A.S.T.M. procedure and A.A.R. requirements at the dryer, become powdered from abrasion during transmission under pressure.

Move Sand Slowly

By B. S. Snow

President, T. W. Snow Construction Company, Batavia, Ill.

To reduce the wear and tear on the piping between the drum and the overhead storage tank, the first essential is to reduce the amount of air used to the minimum. Second, in making bends, make them short. Long-radius pipe bends are no good, but wye lateral fittings are good.

Pressure should be reduced by an automatic reducing valve so that the turbulence in blowing is reduced to the minimum. Overblowing is one of the greatest errors. A pressure gauge should be placed so that the operator can watch the pressure in the drum—not the line pressure—and promptly shut off the air with a plug valve as the drum blows out. A drum holding one ton of sand will blow out in 30 to 40 sec. through a vertical 3-in., extra-heavy pipe 50 ft. long. If the storage tank is offset 40 to 50 ft. and about three bends in the line are included, the extra time required will be 10 to 15 sec. These figures are based on good clean engine sand. If the sand is dirty, although washed, the percentage of real fines will determine the rate of discharge, as the slugs of sand will pack tighter and slow up the rate of travel.

To minimize cutting, sand can be made to travel at slow speeds if proper control means are used. This is now being accomplished in some of the more recently designed sanding stations at which the sand is stored in drums at ground level and forced into small overhead pots which are open to the atmosphere. From these containers the sand will automatically flow by gravity, and with little abrasive effect, direct to the locomotive whenever the hose valve is opened.

Anchoring Track on Different Ballasts

What effect, if any, does the type of ballast have on the number of rail anchors required? Are more or less anchors needed on rail supported on gravel ballast than on stone? Why?

Add More if Rail Runs

By G. M. Magee
Director of Engineering Research, Association of American Railroads, Chicago

The number of rail anchors required to restrain rail movement depends upon the intensity of the creepage force and the holding power of each anchor. The resistance of the rail anchor to slippage on the rail is generally considerably in excess of the holding power of the tie in the ballast. Consequently, the number of rail anchors required is determined by the holding power of the tie and this depends largely upon the characteristics of the ballast. When the rail anchor presses against the tie, the tie tends to move in the direction of pressure, pushing the ballast ahead of it. The characteristics of the ballast will obviously have an important influence on the holding power of the tie, but these are not necessarily directly related to the general type of the ballast such as crushed stone, crushed slag, or gravel. A heavy-type ballast will, of course, resist movement better, but the angularity and roughness of each particle is of more importance in resisting rolling and sliding. If the ballast has cementing characteristics, it is possible that even a gravel ballast with a considerable proportion of sand may offer high resistance to tie movement.

In general, therefore, it may be expected that fewer anchors will be needed with crushed stone ballast than gravel ballast, but this is not always true for the reasons stated above. Because the characteristics of ballast and the intensity of creepage force cannot be readily determined, the most practical solution for determining the number of rail anchors is to apply them in the minimum number and in the arrangement recommended in the A.R.E.A. Manual and then observe the amount of rail movement to determine whether additional anchors need to be applied.

Up-to-Date Instructions for Foremen

What are the best methods of keeping foremen up to date on general instructions? Should such instructions be completely reissued periodically? If so, at what intervals? Explain.

A Duty of Supervision

By L. C. Blanchard
Roadmaster, Chicago, Milwaukee, St. Paul & Pacific, Minneapolis, Minn.

This is an interesting question and one regarding which I feel our railroad has made considerable progress. It seems to me that general instructions fall into four groups: (1) Miscellaneous instructions—usually issued in the form of mimeographed circular letters; (2) rules—such as provided in a standard "Book of Rules"; (3) technical information—as provided in the form of M/W drawings; and (4) instructions for carrying out track work—variously provided.

General Instructions—In the course of time a great many instructions are issued by the general office of any railroad, usually in the form of mimeographed circular letters. In most cases they are numbered and given a subject heading to be used in filing. Any trouble that exists with this system begins at the supervisory level where each office has its own filing system or no system at all. Letters piled in a drawer, one on top of another, have no value to an active supervisor.

I feel that the engineering department of our road has taken a step in the right direction. At the beginning of the working season each extra-gang foreman and his timekeeper are provided with a three-ring, durably bound, loose-leaf note book large enough to hold all of the circular letters that are currently in effect. An index is provided at the front of the book showing the circular letter number and the subject heading. All personnel of each gang are required to familiarize themselves with the contents of this note book, so that as problems arise they can quickly review the instructions pertaining to them. At the end of the working season the books are recalled to the general office where they are brought up to date and made ready to be re-issued at the beginning of the next working season. Letters received during the working season are simply added in the ring binder. When possible, such letters should be typed on 8½-in. by 11-in. paper so as to fit neatly in the binder, making a uniform book.

Every roadmaster's office should be provided with one of these books and charged with keeping it

up to date. It would be fine if every foreman could have a copy. However, only exceptional foremen would probably maintain such a book and make adequate use of it.

I believe best results are obtained where the local supervisor issues instructions directly to his foremen, by letter, currently, as the need arises. He should then follow up promptly with oral discussion to know that the matter is understood. Too often letters without a follow-up discussion are only partly understood or carried out. By the same token, oral discussion without a letter as an aid to memory is equally faulty. Letters issued by the local office should follow closely the wording of instructions issued by the general office, since these are the result of careful study and are carefully worded.

Rules—All railroads provide their foremen with standard-rule books. On our railroad we have two rule books. One deals with the operating rules, definitions, the use of signals and general instructions, whereas the other covers the safety rules. Each book is the outgrowth of many years of work in developing operating methods and safe practices. All supervisors, foremen and motor-car operators are required to take an examination periodically on both of these rule books. Each is provided with a pocket-size certificate showing that he has been so examined and is required to carry this certificate with him on the job. If his work takes him from one division to another the receiving-division officer is required to check his card and, if necessary, re-examine him.

Technical Information—Usually this is provided by means of blue prints of drawings that show the details of switch layouts and a wide variety of other subjects. The trouble here is that too often the prints are filed and not taken out on the job where they could be put to work. About 10 years ago I tried an experiment that really paid off. On my territory there were 16 foremen. For each of these foremen I made up a set of 16 prints that applied to his section. Included were drawings of turnouts, motor-car set-offs, right-of-way fence details, snow fence, methods of shinning track, etc. I stapled these together and rolled them in oil cloth. As I presented them to each foreman, I went over the details with him so he had a good understanding of them. I also charged him with taking good care of the prints. The interest shown in these drawings and the improvement in the work of these men was startling. Two years later I made a check to see how many of the prints were still in existence and much to my surprise every foreman was able to produce his roll of prints. It is my contention that a print on the job is worth any number of them in the files.

Track work instructions—Each supervisor and track foreman is in need of concise, specific, authoritative instructions for carrying out track work. The chief engineer of our road has supplied this need by having published a pocket-size booklet containing 87 specific instructions for carrying out track work. This booklet is furnished to every foreman and supervisor. It is treated with the same respect as our rule books and has proven to be of the utmost value in carrying out our work in a uniform manner. It has eliminated the need for reissuing such instructions periodically. Local supervisors frequently call to the attention of their foremen certain instructions in this booklet to be reviewed as the work progresses. This eliminates much letter writing.

Most railroads put out ample and adequate instructions in one form or another. The main problem is to get them to the men in the field. Letters from supervisors should not be of a sarcastic, scolding, or of a severely critical nature, but should only be informative, instructive and beneficial. My experience is that foremen like to know what is going on and like to read letters that are written with kindly intent.

It is the local supervisor's responsibility to see that the instructions furnished from the general office are properly understood and carried out by the men in the field.

Rules Issued in Book Form

By R. A. Currier

Section Forman, Boston & Maine, Dover, N. H.

Foremen on our Portland division have had an encyclopedia of information issued to them in the form of two loose-leaf note books which contain a total of 265 pages. These books, entitled "Instructions to Portland Division Foremen," are kept at section headquarters as a guide in making out various forms such as time returns, service records, and rail reports. The first book contains an index for both books, and each is intended to supplement rather than replace other published rules and regulations.

When a rule or form is revised, a corrected copy is sent to each foreman. The foreman signs the obsolete rule or form, together with an accompanying acknowledgment, and returns both to the supervisor. In this way, foremen are kept up to date and don't have to keep going to the office to find out how to fill out reports or ask for instructions. Reports are therefore received at the office sooner, keeping the office work up to date also.

As our rules are kept in book form on note-book paper, there is less chance of their getting lost or destroyed as instructions often did in the past when put on bulletin boards. Once these books are put in order and given out to each foreman, it is very easy to keep up to date as the sheets are mimeographed. They are well worth the time and effort put into them.

Re-issue Some Yearly

By H. S. Chandler

General Supervisor of Track, Chesapeake & Ohio, Richmond, Va.

Some general instructions should be completely re-issued once a year. For instance, specific instructions should be issued in early fall to all foremen concerned in regard to winterizing their complete territories. General instructions should also be re-issued each year relative to the track to be worked during spring and summer months, with special emphasis being placed on the precautions that should be taken to prevent buckled track.

I see no reason for other general instructions being put out periodically, unless some amendments are made which will automatically cancel old instructions.

Needs Constant Attention

By O. H. Carpenter

General Roadmaster, Union Pacific, Pocatello, Idaho

The problem of keeping track foremen up to date on instructions concerning their work is one that is constantly with us and demands careful consideration from all supervisors. This is particularly so because track foremen are frequently located at outlying points

(*Continued on page* 400)

without direct communication with their supervisor.

Most of the general instructions for guidance of foremen are contained in the rule books, but special instructions by letter are sometimes issued explaining or supplementing the instructions contained in the book. We have never made it a practice to re-issue all existing instructions at one time other than at the times the rule books are reissued. I am not sure it would be a good practice to re-issue all instructions at one time periodically, as this would involve a foreman receiving a large mass of instructions, many of which would not apply to his particular section. Furthermore, it is doubtful that many foremen would take the time to read and digest such a large number of different instructions at one time.

We issue letters of instructions to foremen from time to time as the need for them becomes apparent, especially those relating to the handling of snow and ice conditions during winter months, patrolling and watching of tracks during periods when heavy rains are prevalent, taking care of fire hazards during dry seasons of the year and other conditions which require attention at a particular time. It is my thought that by renewing instructions near the special time foremen are likely to be faced with any particular hazard, we will enable them to keep the instructions in mind to a better advantage than by renewing them periodically when they have no particular significance. Instructions concerning the handling of track cars and safety hazards are issued as they become necessary every few months. All accidents and personal injuries are analyzed and the results given to all foremen at the time with instructions as to how to prevent a recurrence.

During the past 10 years we have had numerous permanent changes in foremen, and even more temporary changes caused by the necessity of relieving foremen for vacations. When a change is made, the roadmaster goes over the new territory with each man and points out the work that is to be done, indicates all locations where any special hazard exists, and reports on any other special conditions pertaining to the particular territory. At that time, he gives specific instructions as to the manner in which each matter is to be handled. The roadmaster repeats these instructions whenever he is in the territory until the new foreman is entirely familiar with conditions on his new section. The matter of handling track cars varies greatly because of local conditions and, although we have rules and instructions covering this general matter, there are different conditions on practically every section which require special instructions. These are given by the roadmaster at the time a new man is placed on the section.

The matter of keeping foremen properly instructed and up to date on what is required of them is one of the most important duties of a supervisor.

How and When of Building Inspections

How often should building inspection be made? When? What details should be given particular attention at such times? Explain.

Don't Forget Obsolescence

By H. M. Harlow

Assistant General Supervisor, Bridges & Buildings, Chesapeake & Ohio, Richmond, Va.

Railroad buildings should be given a thorough inspection at least once a year to determine in detail the physical condition of the structure. This inspection should be made by the bridge and building supervisor and other responsible officers prior to, but in connection with, setting up the maintenance program for the ensuing year. At this time the foundation, floor, structure, framing, roof structure, siding, windows and doors should be inspected carefully to determine if repairs or replacements are needed. The lighting and heating facilities, as well as the fire protection, should also be inspected at this time. The need for painting, from the standpoints of both appearance and maintenance, should be decided upon.

In addition to making an annual inspection, the supervisor or bridge inspector on his regular trips over the road should inspect buildings for light repairs, such as broken window glass, damaged locks, stove or heating plant part replacements, gutter or downspout trouble and other defects of a similar nature. At such times the fire extinguishers should always be checked for condition.

Any time that maintenance officers are in the vicinity of buildings, inspections should be made, even if time or conditions do not permit a very thorough one. Often corrective measures or repairs made at the right time can prevent more serious trouble later, such as stopped-up downspouts causing damage to joists and ceilings of eaves or roof structure. The housekeeping of the occupants should be noted and, if not satisfactory, steps should be taken to have it improved by handling with other departmental officers if necessary.

A factor sometimes overlooked by maintenance men in inspecting buildings and in making repairs is that of the expected future life or use of individual buildings. This is especially important at this time because of the changes in operating methods and in motive power now taking place on many railroads. Depots, telegraph offices, interlocking towers, shop buildings, toolhouses, bunkhouses—in fact, practically all railroad buildings—should be scrutinized carefully in this respect before heavy repairs are approved. Retirement or major alterations may be just around the corner because of changes of this nature. Retirement of all or portions of a structure can often be justified because it is no longer needed and savings can be effected over and above a reduction in actual maintenance costs.

Inspect Buildings Annually

By A. E. Burford

General Foreman, Bridges & Buildings, Illinois Central, Memphis, Tenn.

The age and condition of any building should govern the frequency with which it is inspected, but the average building should be inspected annually. Late winter and early spring are good times for these inspections because they will enable one to assemble material to make any necessary repairs as soon as the weather will permit.

Close inspections should be made of the foundations and floor system to determine if there has

(Continued on page 402)

Look at the many advantages multi-purpose Macbeth Spike Anchors have over other types of rail fasteners!

REDUCES MECHANICAL WEAR:

4 Macbeth Spike Anchors clamp rails, tie and tie plates solidly together with a force of approximately 4½ tons. No hold down spikes or conventional wear-resistant devices required because *the tie plates can't shift.* Mechanical wear is reduced because there is no relative motion between the tie and tie plates.

REPLACES CONVENTIONAL SPIKE AND ANCHOR:

Macbeth Spike Anchors drive into the ties through the line spike holes of standard tie plates. *Every* Macbeth is immediately effective when fitted and *stays* that way. They hold the rail with a grip far exceeding the resistance of the ballast...and stop creep *both ways.*

NO MAINTENANCE:

Macbeth Spike Anchors when properly driven require no maintenance...because *they won't work loose.*

REDUCES IMMEDIATE AND LONG-RANGE COSTS:

4 Macbeth Spike Anchors per tie do the job of line spikes, hold downs and at least 2 conventional anchors (4 when 2-way holding is needed)...and you don't need wear-resistant devices. Macbeths cut maintenance...and since they reduce wear, your tie renewal costs come down, too.

for facts, figures and comparative costs, write for Bulletin C.

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been any settling of the main structure or any damage caused by termites. The roof should be thoroughly inspected for leaks that could cause costly damage to the interior of the structure. Roof trusses, particularly if they are of wood, should be carefully examined to see that there is no deterioration where trusses rest on the walls of a structure, and also to see that bolts in trusses are tight and in good condition.

The walls of a masonry building should be examined for cracks, loose mortar or any other defects. On frame buildings a close inspection should be made for deterioration of materials and condition of paint. Finally, smoke jacks, chimneys and flues should be examined to prevent the possibility of fires.

Use of Preframed Headblock Ties

To what extent is it practicable to preframe headblock ties before treatment so they will fit switch machines? Other switch ties requiring dapping, if any? Explain.

Frame Before Treatment

By F. R. Woolford

Chief Engineer, Western Pacific, San Francisco, Cal.

It is my opinion that all preframing possible should be accomplished prior to treatment because only through such a method can we secure satisfactory treated timber for use in track and structures. The Western Pacific has followed this practice in the past and I belive it is an accepted practice by nearly all Class I railroads. We are preframing headblock ties and other ties within turnouts for which certain timber dapping and boring are required. Only under unusual conditions do I think a carrier can justify treatment before preframing operations.

Seldom Worth the Cost

By J. S. Parsons

Assistant Chief Engineer, M. of W., Erie, Cleveland, Ohio

While it certainly is better practice to preframe headblock ties before treatment so that they will fit switch machines, it is quite often more practicable to adze and bore them in the field after the timber has been treated. Several factors must be considered before it can be decided that preframing should be made a standard. The two most important questions involved are: (1) Does any increased life resulting from preframing justify the added cost? (2) How many different types of switch machines, and we might include spring switches, are involved on any one railroad?

In answer to the first question, my experience indicates that preframing is not economical because the cost is not justified from the standpoint of added life. During the life of a headblock tie the greater percentage of deterioration comes as a result of mechanical wear due to muddy conditions with accompanying pumping under traffic or from tamping necessary to keep the timbers tight. Failure, as a rule, starts at the bottom of the timber and moisture and abrasives enter from that section. No failure should originate where treated ties are adzed if the adzed surface is properly painted with hot creosote oil and the switch machine then securely lagged to the painted surface.

The second question is especially important where switch machines are used to any great extent, because in most such cases a number of different types of machines are in use, each requiring a different timber framing. For this reason and also because of the few timbers generally installed annually, it does not pay to mass-produce preframed headblocks. Furthermore, the cost to handle only a few timbers to the framing plant and to set up machinery for framing them exceeds any value received from preframing.

Needs Are Too Small

By J. F. Yerger

Chief Engineer, Signals & Communications, Lehigh Valley, Sayre, Pa.

Although we are of the opinion that the preframing of headblock ties before treatment is logical, requirements for such ties on a road as small as ours are so small that it would not be economical to preframe them.

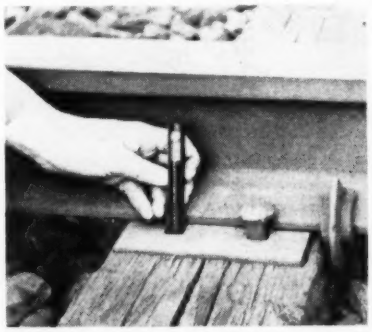
PRODUCTS OF MANUFACTURERS

New, improved equipment, materials, devices

For additional information on any of the products described on these pages, use postcards, page 405.

WOOD HARDENER IN CAPSULE FORM

TYLIFE, a product for treating spike holes, which is being distributed by the Maintenance Equipment Company, Chicago, is now being offered in the form of capsules. The resinous-like plastic glue compound is packaged in plastic capsules of two sizes, $^{13}/_{32}$ in. in diameter and $^{17}/_{32}$ in. in diameter. The capsules are dropped by hand into the spiked holes to be treated. The compound is then pressurized into the fibers and grain of the surrounding wood by the driving of the spike or plug. As the spike or plug is



Inserting Tylife capsule, sealed in U-shaped wooden plug, into a worn spike hole.

driven into the hole, it makes contact with the upper portion of the capsule which contains an activator. This activator then becomes mixed with the compound in the lower portion of the capsule, causing it to harden quickly.

The manufacturer claims that Tylife retards backing-out of the spike by forming a bond between the spike and the wood fibers and that, by hardening the walls of the spike hole, it results in greater resistance to side movement of the spike in the hole. Corrosion of spikes and the deterioration of the surrounding wood through action of moisture are likewise said to be prevented since the compound seals the hole against the entrance of water. In those cases where spike

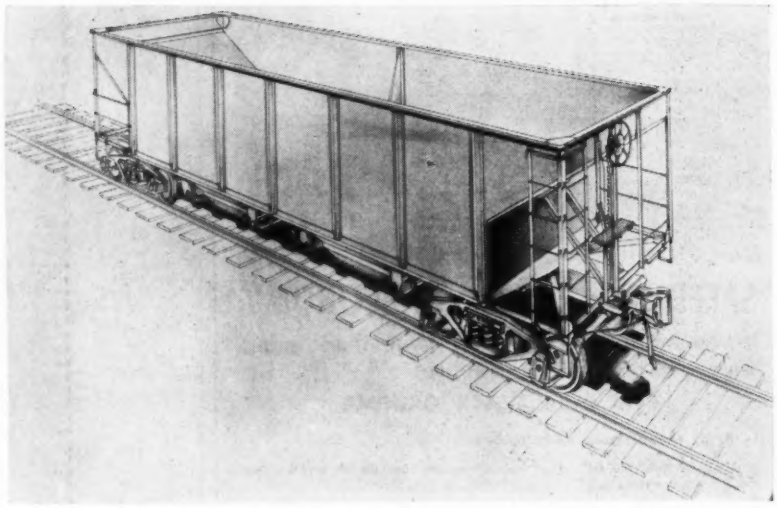
(*Continued on page* 404)

holes are pre-bored completely through the ties, spherical glass sealers are available. These sealers, slightly larger than the spike hole, are driven to a point just below the depth of the driven spike to prevent the loss of the compound.

Tylife is also said to be advantageous in the rehabilitation of worn spike holes. The $^{13}/_{32}$-in. capsules are employed in those cases where the spikes are to be driven into the same holes. The capsules, sealed into the slots of U-shaped wooden tie plugs, are inserted into the holes (see accompanying illustration), and the spikes driven over them. This combination of capsules and plugs is said to be sufficient to take up all wear and form a reconditioned hole possessing all the advantages of a new hole.

When worn holes are to be plugged and the spikes driven elsewhere in the tie, $^{17}/_{32}$-in. capsules are used and standard AAR spike plugs driven over them. The manufacturer claims that, after the material has properly set, spikes may be driven anywhere, even in close proximity to the plugged hole.

Tylife is said to have a reasonably long shelf life and may be stored satisfactorily for periods of at least a year.



The new Pullman-Standard all-welded, 70-ton, all-steel ballast car.

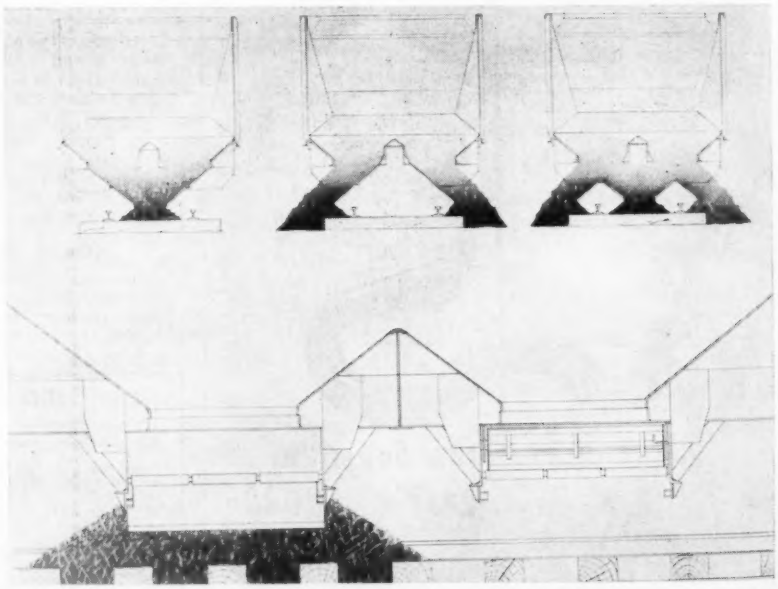
ALL-WELDED BALLAST CAR

AN ORDER for 500 all-steel, 70-ton-capacity ballast cars of welded construction for the Southern Pacific has been announced by the Pullman-Standard Car Manufacturing Company, Chicago. Outstanding feature of the new cars is their welded construction which eliminates lap joints and rivet heads and provides a self-clearing interior for greater control of ballast distribution.

Each car has eight longitudinal doors, four on the sides and four in the center. The center doors operate as two units, each longitudinal half of the car acting as a single unit, to dispose of the load between the rails. For convenience the center doors can be operated from either side of the car. The four side doors operate as separate units for disposition of the load outside the rails. Both center and side doors are under the control of the operator through the medium of enclosed, self-locking worms and gears in housings. This feature enables the operator to stop the doors safely in any desired position. The door operating mechanisms will be supplied by the Enterprise Railway Equipment Company, Chicago.

The construction of the new car is designed to facilitate the free flow of ballast. The end floor sheets slope

(*Continued on page* 407)



Longitudinal and sectional views of the new ballast car illustrating the manner in which ballast can be distributed on the track.

ADDITIONAL INFORMATION

On Any of the Products Mentioned in This Issue

The following is a complete list of products mentioned in the advertising pages of this issue. If you desire additional information on any of them, use one of the accompanying addressed and postage paid cards in requesting it. In each case give product name and page number. The information will come to you directly from the manufacturer, without obligation on your part.

Products Index

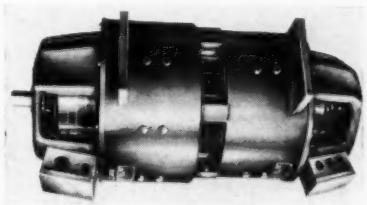
For additional information on any of the products described on these pages, use postcards, page 405.

30 deg. from the end to the bolster, and the lower floor sheets lay at a slope of 36 deg. from the bolster to the door. All floor sheets are 5/16-in. plate and are secured by welding, thus eliminating obstructions. The side slope sheets, also of 5/16-in. plate, extend from the side sheets to the door opening and from the slope floor sheet at the end to the cross-ridge floor sheets. They are sloped 36 deg., and are assembled by welding.

All side stakes are located outside the car and are automatically arc-welded to the side sheets. This design is said to keep interiors smooth and to reduce damage and corrosion of the stakes. There are only two inside braces. All side sheets are ¼-in. plate, butt-welded together vertically and secured to the side sill and the side plate by automatic arc-welding. The Western Pacific has ordered 100 ballast cars of this design but with less inside length and somewhat less capacity.

HOLLOW-SHAFT GENERATOR UNIT

A SPECIAL hollow-shaft generator, designed especially for use with mobile repair shops, has recently been developed by the Bogue Electric Manufacturing Company, Paterson, N. J. The unit is so constructed as to be mounted in the chassis of a truck with the truck's drive shaft going through the hollow shaft of the generator.



It is thus driven by the engine of the truck to supply alternating current for lighting within the mobile shop, operation of machine tools, and for operation of external devices. The generator also furnishes direct current for welding (up to 400 amp.), and a constant potential output for battery charging. The manufacturer points out that trucks so equipped become light and power sources for use in construction work, repair work, and in emergencies.

NEW DRAFTING TABLE

A NEW drafting table manufactured by the Scott-Rice Company, Tulsa, Okla., has been developed which incorporates refinements specified in a survey among draftsmen. Precision built on steel jigs, its rigidity is said to be assured by heavy leg bolts in addition to mortising. The clear sugar pine top,

which is claimed to be warp-resistant, has steel end cleats for positive, true edges. Undercarriage is of aged, selected hardwood.

THE MONTH'S NEWS...

. . . among railway men—the associations—the suppliers

Changes in Railway Personnel

General

Willard H. Kyle, assistant vice-president—operation of the Canadian National at Montreal, Que., and an engineer by training and experience, has been appointed vice-president of the Central region at Toronto, Ont.

Engineering

John W. McMillen has been named assistant engineer of the Terminal Railroad Association of St. Louis, succeeding **W. L. Ashton,** resigned.

E. H. Lundin, acting chief engineer of the Rutland at Rutland, Vt., has been appointed chief engineer.

W. F. Armstrong has been appointed architectural engineer of the Chicago & North Western with headquarters at Chicago, succeeding **L. C. Winkelhaus,** who had asked to be relieved of the duties of this position.

Raymond Dejaiffe, assistant engineer on the Toledo Terminal, has been promoted to engineer maintenance of way, succeeding **Ray Stephens,** who has retired after 30 years of service.

W. E. Chapman, division engineer on the Central of Georgia with headquarters at Columbus, Ga., has been promoted to engineer maintenance of way at Savannah, Ga., re-activating the position left vacant in January 1950 when **H. Gray Carter** was promoted to chief engineer. **J. B. McKerley,** supervisor of bridges and buildings on the Macon division at Macon, Ga., has been advanced to division engineer at Columbus.

E. W. G. Chapman, whose promotion to assistant chief engineer for the Atlantic region of the Canadian National at Moncton, N. B., was recently announced (RT&S, Feb., p. 168), was born at Dartmouth, N. S., on September 17, 1890, and was graduated in civil engineering from Nova Scotia Technical College in 1914. Entering the employ of the Canadian National upon graduation, he served as an instrumentman at Truro, N. S., until 1916, when he joined the Overseas Canadian Field Artillery (36th Battery). Three years later Mr. Chapman returned to the CNR as an instrumentman, in which capacity he served at Truro and New Glasgow. In November 1927 he was named division engineer on the Edmundston division, subsequently serving as assistant superintendent and acting superintendent on that division. In 1943 he was appointed terminal superintendent at Sydney, N. S.,

E. W. G. Chapman

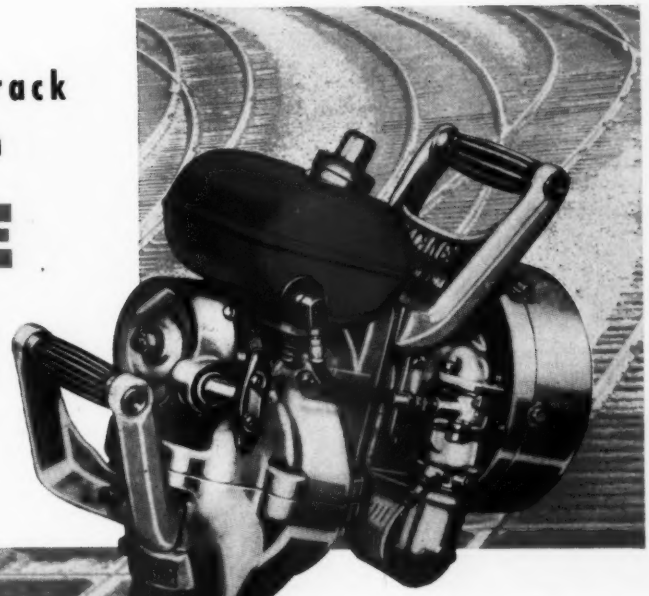
where he remained until April 15, 1945, when he was named engineer maintenance of way at Moncton, the position he held prior to his recent promotion.

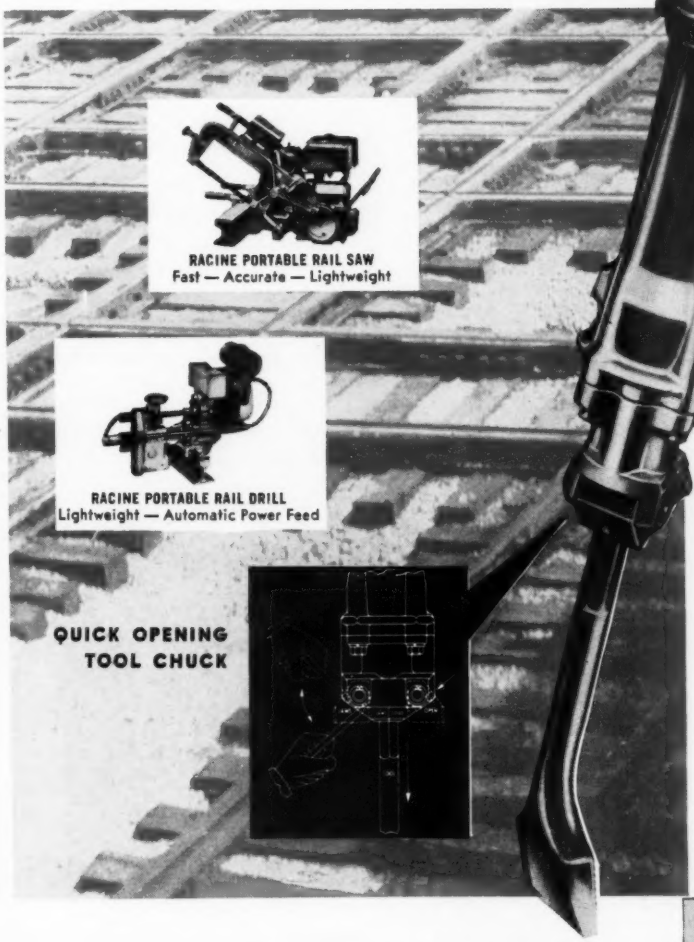
C. R. Riley, division engineer of the Baltimore East End division of the Baltimore & Ohio, has been promoted to engineer maintenance of way of the Eastern region, with headquarters as before at Baltimore, Md., to succeed **W. Morrow,**

(*Continued on page* 410)

You, too, can reduce track maintenance costs with

RACINE PORTABLE RAIL TOOLS





RACINE PORTABLE RAIL SAW
Fast — Accurate — Lightweight

RACINE PORTABLE RAIL DRILL
Lightweight — Automatic Power Feed

QUICK OPENING TOOL CHUCK

The NEW multi-use RACINE PORTABLE TIE TAMPER

- **LABOR SAVING** — One man operation — gives you the equivalent of eight hours more work every day.
- **EFFICIENT** — Speeds up manpower efficiency by reducing fatigue. Easily carried, easily operated — shock-free. Delivers 1500 high velocity "stirring action" blows per minute.
- **QUALITY CONSTRUCTION** — New rubber-cushioned, quick-opening tool chuck. Tools can be changed in less than a minute. Easy starting 1¼ H.P., 2 cycle air cooled gasoline engine with self-retrieving replaceable cable type starter. Overall size of tamper 15" x 30". Weight 55 lbs.

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Railway Personnel (Cont'd)

who has retired. **C. E. Jackman,** formerly division engineer at Newark, Ohio, who was recently moved to Cincinnati, has been transferred to Baltimore to succeed Mr. Riley. **J. A. Caywood,** assistant division engineer at Grafton, W. Va., has been promoted to division engineer at Cincinnati to replace Mr. Jackman, and **R. G. Rayburn,** assistant to division engineer at Cumberland, Md., has been promoted to assistant division engineer at Grafton to succeed Mr. Caywood. **L. B. Waterman,** assistant to division engineer at Akron, Ohio, has been advanced to assistant division engineer at Newark. **E. M. Cummings,** assistant division engineer at Connellsville, Pa., has been advanced to division engineer at Garrett, Ind., to succeed **E. H. Barnhart,** who has retired, and **R. A. Downey,** assistant to division engineer at Baltimore, has been promoted to assistant division engineer at Connellsville to replace Mr. Cummings.

Robert P. Puddester, whose promotion to engineer maintenance of way for the Atlantic region of the Canadian National with headquarters at Moncton, N. B., was recently announced (RT&S, Feb., p. 168), was born at St. John's, N. F., where he received his higher education at Methodist College. He entered the employ of the Newfoundland Railway as a clerk in the engineering department at St. John's in January 1924. In July 1931 he became a draftsman, and in July 1934 assistant engineer. In January 1947 he was appointed acting chief engineer and in the following year his appointment was confirmed. With the incorporation of the Newfoundland as a part of the CNR system in 1949, Mr. Puddester was made district engineer. In August 1952 he was appointed principal assistant engineer at Moncton, the position he held at the time he received his recent promotion.

Robert P. Puddester

Stephen J. Owens, whose promotion to district engineer maintenance of way of the Chicago, Burlington & Quincy at Omaha, Neb., was recently announced (RT&S, February, p. 171), was born November 8, 1908, at Chicago. He graduated from the Michigan College of Mining and Technology in 1931, and in 1935 entered the service of the Burlington as a rodman at Lincoln, Neb. He was promoted to instrumentman the following year, and in July 1937 was appointed assistant roadmaster at Denver, Colo. He was named roadmaster at Orleans, Neb., in March 1938, and in September of that year was transferred to Ferry, Neb. Mr. Owens was named assistant engineer at Chicago in July 1939, assistant engineer on the Boysen (Wyo.) line change in January 1948, and division engineer at Casper, Wyo., in April 1950—the position he held at the time of his recent promotion to district engineer maintenance of way.

William M. Jaekle, who has been promoted to assistant chief engineer of the Southern Pacific with headquarters at San Francisco (RT&S, February, p. 168), was born August 25, 1912, at Portland, Ore. He graduated from Stanford University in June 1934, and the following September entered the service of the SP as an instrumentman at Oakland, Cal. After serving as engineer-inspector and assistant engineer at Oakland, he was appointed engineer-inspector on the Shasta Dam railroad relocation in 1939. From 1940 until 1941 he served as assistant division engineer of the Salt Lake division at Ogden, Utah, and in the latter year was transferred to the Western division at Oakland. In 1943 he was promoted to division engineer of the Rio Grande division at El Paso, Tex., and in 1948 was transferred to the Coast division at San Francisco. From 1948 until 1951, Mr. Jaekle served as construction engineer on the Meridian Dam railroad relocation and in the latter year was promoted to assistant engineer maintenance of way and structures—the position he held at the time of his recent promotion to assistant chief engineer.

William M. Jaekle

Robert M. Wickwire, whose promotion to building engineer for the Atlantic region of the Canadian National at Moncton, N. B., was recently announced (RT&S, Feb., p. 168), was born at Yarmouth, N. S., and received the degree of Bachelor of Engineering from Nova Scotia Technical College in 1947. He joined the CNR as an instrumentman at Campbellton, N. B., in May 1947, and a year later was trans-

ferred to Moncton. In June 1949 Mr. Wickwire was appointed structural de-

Robert M. Wickwire

signer at Moncton, the position he held prior to his recent promotion.

H. M. Williamson, who was recently promoted to assistant engineer maintenance of way and structures of the Southern Pacific at San Francisco (RT&S, February, p. 168), was born June 12, 1914, at Pocatello, Ida. He received his higher education from the University of Utah and the Harvard School of Business and entered railroad service with the Southern Pacific in June 1933 as a rodman and instrumentman on the Salt Lake division at Ogden, Utah. He was transferred to the office of the general manager in 1939, and two years later was promoted to assistant engineer and office engineer for the Western division with headquarters

H. M. Williamson

at Oakland Pier, Cal. Mr. Williamson was named assistant division engineer of the Portland division at Portland, Ore., in 1942. From 1943 until 1946 he served in the U. S. Navy, returning to his former position at Portland the latter year. He was promoted to division engineer at Portland in 1949—the position he held at the time of his recent promotion.

Wolters Ledyard, whose promotion to assistant division engineer on the Pennsylvania division of the New York Central at Jersey Shore, Pa., was recently announced (RT&S, Feb., p. 168), was born at Brooklyn, N. Y., on May 8, 1913, and received his higher education at Syracuse University. Entering the employ of the NYC as chainman in the engineering department at New York on October 1, 1940, Mr. Ledyard subsequently served as rodman and draftsman until October 1, 1944, when he was appointed assistant supervisor of track at Rochester, N. Y. On July 1, 1947, he was named bridge and building inspector at Pittsfield, Mass., and served in that capacity until January 1, 1949, when he resumed the position of assistant supervisor of track at Albany, N. Y. On November 1, 1950, he was appointed assistant engineer in the office of engineer maintenance of way at New York, where he remained until January 1, 1952, when he was named supervisor of track at Watertown, N. Y. Mr. Ledyard was serving in the latter capacity when he received his recent promotion.

Track

P. D. Fortino, general foreman of track on the Illinois division of the Illinois Central at Champaign, Ill., has been promoted to supervisor of track at Pana, Ill., succeeding **E. J. Brosnahan** who has been transferred to Dubuque, Iowa, replacing **J. H. Stephens,** assigned to other duties.

C. G. Carlson has been named district roadmaster of the Yellowstone division of the Northern Pacific at Laurel, Mont.,

Railway Personnel (Cont'd)

succeeding **H. W. Johnstone. W. J. Condotta** has been appointed assistant roadmaster on the Yellowstone division with headquarters at Glendive, Mont., succeeding Mr. Carlson. Mr. Johnstone has been transferred to the St. Paul division at St. Paul, Minn., succeeding **G. M. deLambert,** who has been named assistant purchasing agent at St. Paul.

C. F. Tondee, apprentice supervisor of track on the Central of Georgia, has been named supervisor of track for the Chattanooga and Durham districts with headquarters at Rome, Ga., to succeed **C. P. Howard,** who has retired. Mr. Tondee was born in Schley County, Ga., and entered the service of the Central of Georgia as a laborer in the roadway department on March 14, 1938. He became assistant foreman on May 16, 1941, and section foreman on January 5, 1943. He has served as apprentice supervisor of track since May 1, 1952.

Edmund S. Bell, Jr., whose promotion to supervisor of track on the Panhandle division of the Pennsylvania at Carnegie, Pa., was recently announced (RT&S, Jan., p. 74), was born at Morgantown, W. Va., on March 6, 1926, and was graduated in civil engineering from Cornell University in 1948. Mr. Bell entered the service of the PRR as a junior engineer at Pittsburgh, Pa., on July 1, 1948. He was appointed assistant supervisor of track at Aspinwall, Pa., in March 1950, and the following October was transferred to Coshocton, Ohio, where he was located prior to his recent promotion.

James F. Burns, Jr., whose promotion to roadmaster on the Seaboard Air Line at Hamlet, N. C., was recently announced (RT&S, Feb., p. 174), was born at Clearmont, Fla., on October 9, 1912. Entering the employ of the SAL on August 7, 1934, as a section laborer at Waldo, Fla., he served successively as apprentice section foreman, extra gang foreman, section foreman, assistant rail gang foreman and rail gang foreman at various locations until April 24, 1950, when he was advanced to assistant roadmaster at Henderson, N. C. On April 1, 1951, Mr. Burns was transferred to Richmond, Va., where he was serving when he received his recent promotion.

B. Barry Mercer, whose promotion to supervisor of track on the New York Central at Clearfield, Pa., was recently announced (RT&S, Feb., p. 180), was born at Malone, N. Y., on October 19, 1903, and received his B.S. degree in electrical engineering from Clarkson College in 1926. He began his railroad carrier with the NYC in July 1933 as a track laborer at Syracuse, N. Y., where he subsequently served in various capacities in the maintenance of way department until April 1942, when he was advanced to assistant supervisor of track at New York. In November 1945 Mr. Mercer was transferred in the latter capacity to the Electric division at White Plains, N. Y., and in November 1950 to the Bronx, N. Y., where he was serving at the time he received his recent promotion.

Miles Covey, assistant district supervisor on the Central Vermont, has been promoted to district supervisor, with headquarters as before at St. Albans, Vt. **Lawrence H. Miles,** assistant district supervisor, has been promoted to district supervisor with headquarters as before at Montpelier, Vt. **J. F. Belanger,** track patrol foreman, has been advanced to assistant district supervisor at Montpelier to succeed Mr. Miles.

Mr. Covey entered CV engineering department service May 12, 1916, and was appointed section foreman on November 9, 1925. He has served as assistant district supervisor at St. Albans since October 1, 1949.

Mr. Miles entered the service of the CV with an extra engineering gang on November 14, 1927. Subsequently he served as sectionman at Middlesex, Vt., and as relief foreman in 1935. He was named section foreman at Bolton, Vt., on January 13, 1941. He has been assistant district supervisor at Montpelier since October 1, 1949.

Bridge and Building

Charles S. Dickison, carpenter foreman on the Chesapeake & Ohio, has been appointed assistant supervisor of bridges and buildings at Covington, Ky.

C. H. Pagett, assistant supervisor of bridges and buildings on the Macon division of the Central of Georgia, has been promoted to supervisor of bridges and buildings to succeed **J. B. McKerley,** who, as announced elsewhere in these columns, has been advanced to division engineer at Columbus, Ga.

Mr. Pagett joined the Central of Georgia as a bridge and building laborer on the Savannah division on January 28, 1935. He was promoted to bridge and building carpenter on April 25, 1935, and to assistant bridge and building foreman on November 27, 1943. He has served as assistant bridge and building supervisor at Macon since March 16, 1947.

Special

To more clearly identify the specific character of their work in the expanding research program of the Association of American Railroads, and in some instances to more clearly define their scope of responsibility, the titles of a number of the members of the Engineering Division research staff, AAR, have been changed, beginning with that of **G. M. Magee,** which has been changed from research engineer to director of engineering research. Among the department heads of the staff, and their assistants, the new titles are as follows:

E. E. Cress, from assistant research engineer to principal research engineer.

H. E. Durham, from track engineer to research engineer track.

E. J. Ruble, from structural engineer to research engineer structures.

Rockwell Smith, from roadway engineer to research engineer roadway.

(Continued on next page)

Railway Personnel (Cont'd)

P. D. Miesenhelder, from concrete engineer to research engineer concrete.

Kurt Kannowski, from rail engineer to metallurgist.

R. E. Purnell, from assistant track engineer to assistant research engineer track.

A. A. Sirel, from assistant structural engineer to assistant research engineer structures.

The titles of **Randon Ferguson,** electrical engineer, and **Seymour Coburn,** chemical engineer, remain unchanged.

Obituary

Dr. Hermann von Schrenk, consulting timber engineer at St. Louis, and a former director of the American Railway Engineering Association, died recently.

Arthur O. Ridgeway, retired engineering consultant for the Denver & Rio Grande Western, and formerly chief engineer of that road, died recently at the age of 83.

Fred C. Wilkinson, assistant chief engineer, system, of the Pennsylvania at Philadelphia, Pa., died February 20 in Bryn Mawr, Pa., Hospital. Mr. Wilkinson was born at La Mira, Ohio, March 18, 1883, and graduated in civil engineering from Ohio State University in 1907. After working summers on the Wheeling (W. Va). Terminal (now PRR), and on the Pennsylvania, he was appointed assistant division engineer of the WT in 1907 and became assistant superintendent of the Waynesburg & Washington in 1917. From 1920 to 1928 Mr. Wilkinson worked in the general office of the Central region of the Pennsylvania, becoming assistant trainmaster, Allegheny and Buffalo divisions, in 1929. He then worked in the general office at Philadelphia, becoming superintendent, Logansport division, in 1932 and superintendent on special duty in the general office at Philadelphia in 1935. He was named assistant chief engineer, system, in 1948.

Association News

Track Supply Association; Bridge and Building Supply Association

Space allotments have recently been made for the joint exhibition to be sponsored by these two associations during the concurrent annual conventions of the Roadmasters Association and the American Railway Bridge and Building Association in September. The exhibit will be held at the Coliseum at Chicago. Although the requests for exhibit space exceeded the capacity of the Coliseum, a small amount of desirable space is still available. Those interested should direct their requests to Lewis Thomas, director

(*Continued on page* 416)

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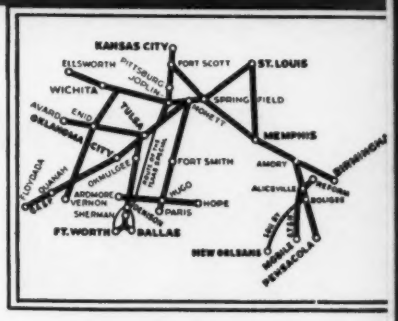

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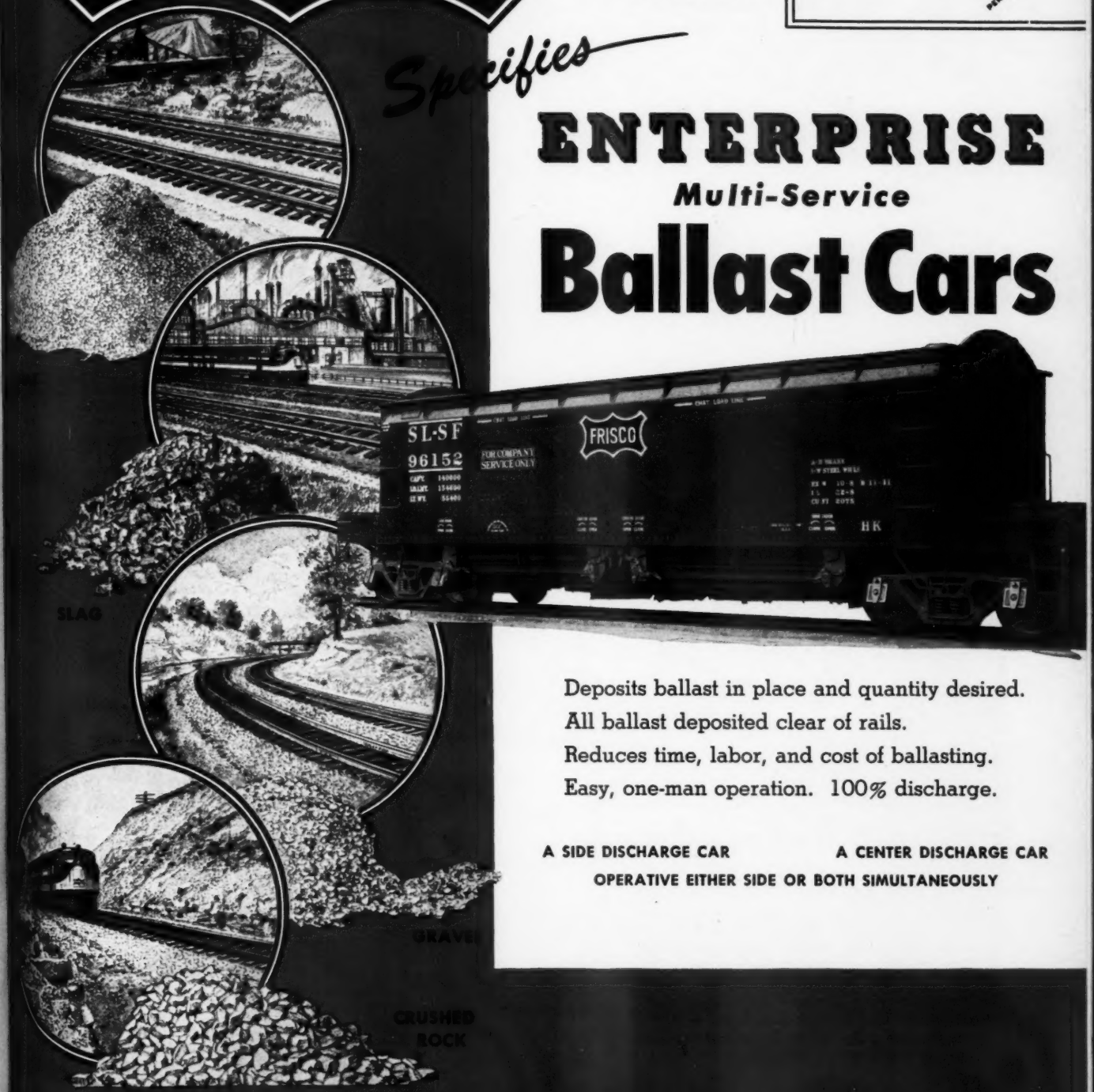

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Association News (Cont'd)

of exhibits, 59 E. Van Buren Street, Chicago 5.

Bridge and Building Association

A meeting of the Executive Committee was held at the Chicago Engineers' Club on the afternoon of March 16. With President Foster R. Spofford presiding, the committee discussed a number of items of business, including the status of the volume which will carry the Proceedings of the 1952 convention. Preparation of the Proceedings is now well underway, and it is expected that copies will be available for distribution to members in the late spring or early summer. Preliminary plans for the 1953 convention were also discussed. It was decided that the next meeting of the Executive Committee will be held on July 10.

American Railway Engineering Association

The fifty-second annual meeting of the association was held at the Palmer House, Chicago, March 17-19. A highlight story of the meeting, including a list of the newly-elected officers and illustrated with photographs of many of the members who attended the meeting, will be found in the feature section of this issue.

By action of the Board of Direction at a meeting held immediately following the close of the convention, the 1954 annual convention of the association will be held at the Palmer House, Chicago, on March 16-18. It was also decided that President C. G. Grove would call a meeting of all chairmen of the standing and special committees of the association to be held at the Palmer House, Chicago on April 27, 1953. Following this meeting, the Board of Direction will hold a brief session.

Roadmasters' Association

Under the direction of President R. H. Gilkey a meeting of the Executive Committee of the Association was held on Monday, March 16, at the Chicago Engineers' Club. Various routine matters were discussed, including the status of the Proceedings of the 1952 convention. It was reported that books would be available for mailing to members in the not too distant future. Preliminary plans for the 1953 convention were also discussed. The next meeting of the Executive committee will be held on May 25.

Maintenance of Way Club of Chicago

The last meeting of the Club was held on March 30 at Eitel's restaurant at Chicago. The speaker of the evening was G. M. Magee, director of research, Engineering Division, Association of American Railroads, whose subject was "Research Developments Affecting M/W Practices." Mr. Magee gave the members a broad cross section of the research now being conducted to develop improved materials

and practices for railway tracks and structures, and outlined some of the conclusions that have been reached as a result of the tests.

At the time of going to press, the program for the next meeting, to be held on April 27, had not been announced. This will be the annual meeting at which the officers for the ensuing year will be elected.

Mississippi Valley Maintenance of Way Club

The next meeting is scheduled to be held at the Hotel De Soto, St. Louis, at 6:30 p.m. on April 13. The program will consist of an address by Col. F. W. Wheeler, executive assistant, Chicago, Burlington and Quincy, who will speak on "Railroad Construction with Emphasis

Meetings and Conventions

American Railway Bridge and Building Association—Annual meeting, September 15-17, 1953, Conrad Hilton (Stevens) Hotel, Chicago. Elise LaChance, Secretary, 431 S. Dearborn street, Chicago 5.

American Railway Engineering Association—Annual Meeting, March 16-18, 1954, Chicago. Neal D. Howard, Secretary, 59 E. Van Buren street, Chicago 5.

American Wood-Preservers' Association—Annual meeting, April 28, 1953, Cleveland Hotel, Cleveland, Ohio. W. A. Penrose, Secretary-treasurer, 839 Seventeenth street, N. W., Washington 6, D. C.

Bridge and Building Supply Association—L. R. Gurley, Secretary, 201 North Wells street, Chicago 6.

Maintenance of Way Club of Chicago—Next meeting April 27. E. C. Patterson, Secretary-treasurer, Room 1512, 400 W. Madison street, Chicago 6.

Metropolitan Maintenance of Way Club—Secretary, 30 Church street, New York.

Mississippi Valley Maintenance of Way Club—P. E. Odom, Secretary-Treasurer, Room 1008, Frisco Building, 906 Olive Street, St. Louis 1, Mo.

National Railway Appliances Association—J. B. Templeton, Secretary, 1020 So. Central avenue, Chicago 44; Lewis Thomas, Assistant Secretary, 59 East Van Buren street, Chicago 5.

Railway Tie Association—Annual meeting, October 14-16, 1953, Biltmore Hotel, Atlanta, Ga. Roy M. Edmonds, Secretary-treasurer, 1221 Locust Street, St. Louis 3, Mo.

Roadmasters' and Maintenance of Way Association of America—Annual meeting, September 15-17, 1953, Conrad Hilton (Stevens) Hotel, Chicago. Elise LaChance, Secretary, 431 S. Dearborn Street, Chicago 5.

Track Supply Association—Lewis Thomas, Secretary, 59 E. Van Buren street, Chicago 5.

Association News (Cont'd)

on Reducing Maintenance Costs," and also the showing of a motion picture entitled "The Labrador Railroad," which depicts various aspects of construction of the Quebec, North Shore & Labrador in Canada.

The last meeting was held on March 9, with 227 members and guests in attendance. The principal speaker was L. L. Adams, chief engineer, Louisville & Nashville, who described hurricane damage incurred on this railroad in 1947. His remarks were illustrated by a motion picture entitled "Fishing a Railroad Out of the Swamp," and additional film slides.

At the close of the March 9 meeting the membership of this new club had reached 483, and the officers of the organization were confident that their goal of 500 members by May would be realized.

Metropolitan Maintenance of Way Club

The annual meeting of the club, with election of officers, will be held at the Hotel Shelburne, New York, on April 30. The principal speaker at the meeting, which will open with dinner at 6:30, will be an officer of the Canadian National. The name of the speaker and the subject of his talk had not been determined at the time this issue went to press.

Supply Trade News

General

The **Oliver Iron & Steel Corp.**, Pittsburgh, Pa., has announced the location of a new general sales office in the Oliver Building, Pittsburgh.

Effective March 16, the name of **Independent Pneumatic Tool Company**, Aurora, Ill., was changed to the **Thor Power Tool Company.**

The **Union Asbestos & Rubber Co.**, Chicago, has been appointed distributor of **Pittsburgh Plate Glass Company** Fiber Glass products to serve railroads, private car lines, and the railroad equipment industry.

The **American Hoist & Derrick Co.**, St. Paul, Minn., has changed its Chicago address from 135 South LaSalle street to 1150 South Washtenaw avenue.

The **Division Lead Company**, Chicago, has recently purchased the **Eagle-Picher Company Metallic Products Division** plant at Argo, Ill. Equipment and personnel of the newly acquired plant will be combined with Division Lead operations.

Personal

William B. Morse, assistant to the manager of the Detroit, Mich., sales and service branch of **Fairbanks, Morse & Co.**, has been named manager succeeding **E. J. Hay**, deceased. Mr. Morse joined the company at the Beloit Works in 1946, and from 1948 until 1951 served as salesman

William B. Morse

for the San Francisco branch. He was transferred to Detroit and named assistant to the manager there in the latter year.

Effective April 15, **J. W. Schoen**, newly appointed vice-president and general sales manager of **R. G. LeTourneau, Inc.**, Peoria, Ill., will take over direction of the company's sales division and other

related departments. Mr. Schoen succeeds **R. E. McCluskey**, who recently resigned.

R. G. Morgan has been appointed district manager of the Moline, Ill., office of the **Timken Roller Bearing** Company, Canton, Ohio, and **R. L. Williams** has been named district manager of the St. Thomas, Ont. office.

G. A. Tamblyn has been named sales manager of the **Frank G. Hough Company,** Libertyville, Ill. Mr. Tamblyn has

G. A. Tamblyn

been associated with the company for 11 years and, since 1948, has served as assistant sales manager.

Paul D. Howard, sales representative for the **Minnesota Mining & Manufacturing Co.,** St. Paul, Minn., has been appointed national supervisor of railroad transportation trades for the firm's reflec-

Paul D. Howard

tive products. He will direct railroad sales of "Scotchlite" brand reflective sheeting, letters, reflectorized railroad signs and delineators.

Colonel Henry E. Wooldridge, vice-president of the **United Transportation Equipment Company,** Redwood, Cal., has been appointed direct factory representative for the **J. H. Holan Corporation,** Cleveland, Ohio, with headquarters at San Mateo, Cal. He will supervise Holan sales in the states of California, Nevada, Arizona, Utah, and the Hawaiian Islands.

Anthony C. Fecht has been appointed general sales and advertising manager for the **Lewis Bolt & Nut Co.,** Minneapolis, Minn.

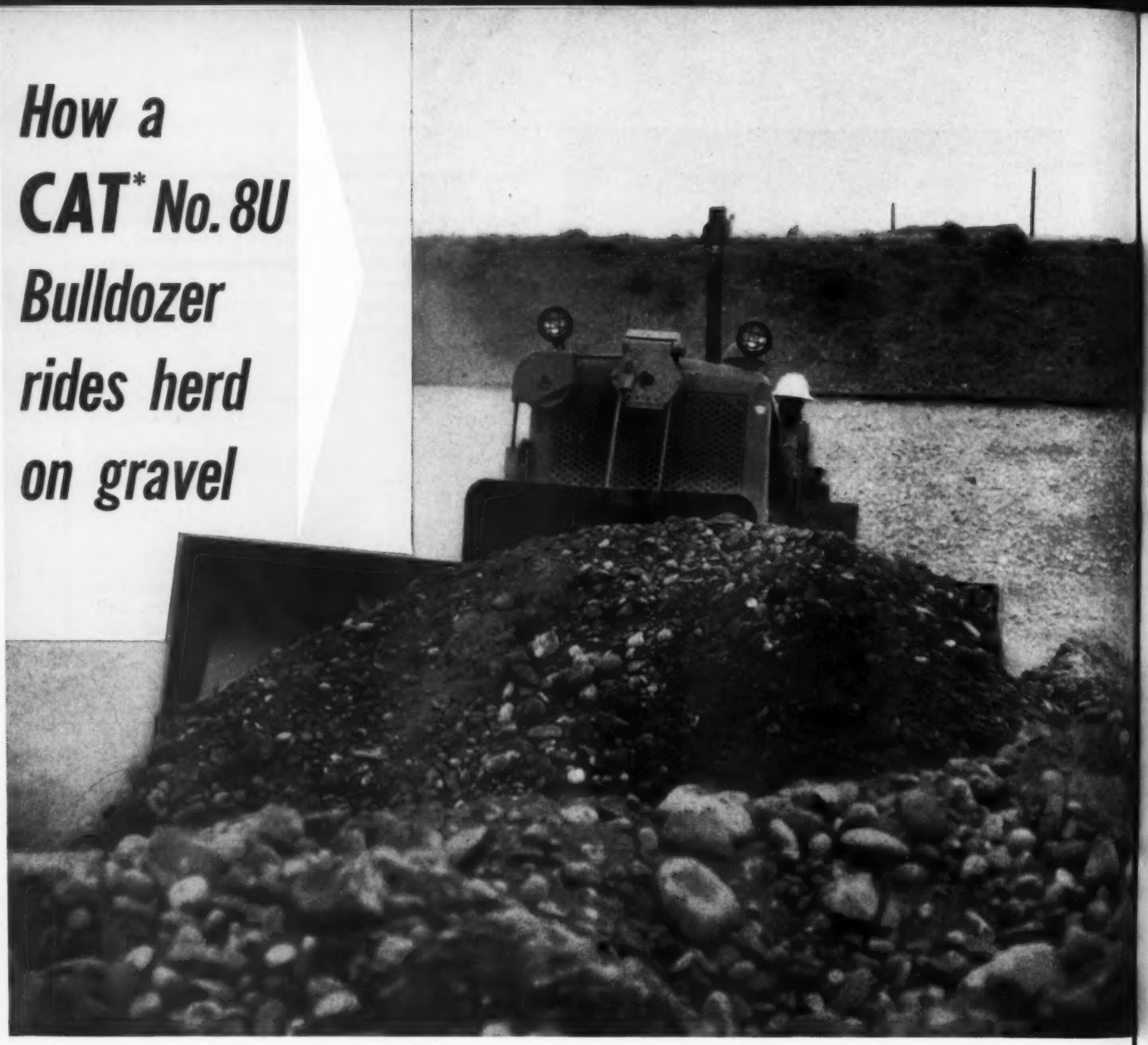
Charles P. Moeller has been appointed general sales manager of the Trackwork division of the **Taylor-Wharton Iron & Steel Co.,** Cincinnati, Ohio.

A. C. Brown, Jr., regional sales manager of the **Air Reduction Sales Company** with headquarters at Pittsburgh, Pa., has been promoted to general sales manager at New York. **R. A. Jamieson,** assistant sales manager at Detroit, Mich., has been promoted to district manager at that location, succeeding **J. H. Hart,** who has been named administrative assistant at Pittsburgh. Mr. Hart succeeds **J. H. Keeney,** who has been promoted to regional sales manager at Pittsburgh, succeeding Mr. Brown.

Edward H. Aldworth has been elected vice-president of the Belco Industrial Equipment division of the **Bogue Electric Manufacturing Company,** Patterson, N. J. In his new position, Mr. Aldworth will direct sales of Belco industrial water-treating equipment in the Middle West. **Vincent R. Cioffi** has been named general sales manager of the division at Patterson. Sales to railroads will be made through the Bogue Railway Equipment division, an affiliated company.

Advertisers IN THIS ISSUE

How a CAT* No. 8U Bulldozer rides herd on gravel



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You can see what it's working in on this operation. It's feeding coarse gravel to a crushing plant, which produces 1½" material for railroad ballast. Power and stamina are needed to stay in there pitching day after day, and this rugged yellow 'dozer qualifies on both counts.

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No other manufacturer offers so many different models of 'dozers as Caterpillar. This complete line is backed by prompt service from your Caterpillar Dealer. He'll be glad to show you what one of these husky units can do for you. Pick your toughest job and call him today!

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- **EASY APPLICATION with new shaker box, or with hand or wheeled spreader (see illustrations below).**
- **NO MIXING with liquids necessary; use H-174 as it comes from box or drum.**
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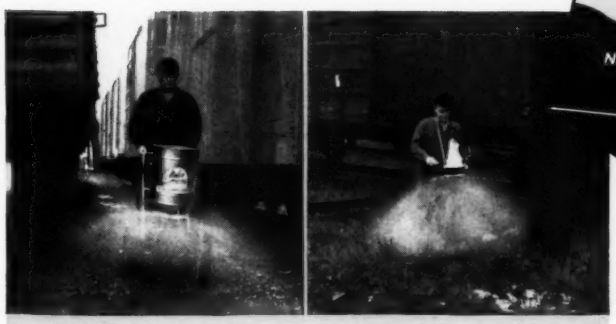
BEST time for Nalco H-174 application is *now.* Pre-emergence killing action continues through the growing season with this powerful soil-sterilant-type chemical. Full information on Nalco H-174 will be furnished promptly upon request.



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